DEPARTMENT OF TECHNOLOGY
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SEPTEMBER 22, 1956
VOL. 151 — NO. 12

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Published every week on Saturday by TELEPHONY PUBLISHING CORP. 608 S. Dearborn St., Chicago 5, Ill. Subscription $3.50 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

Guaranteed Circulation This Issue
11,353 of Which 10,826 is Paid

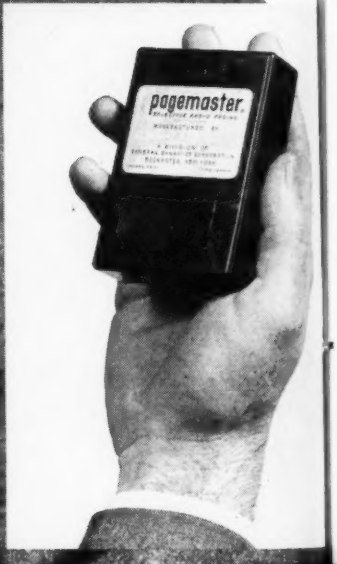
GOING MODERN

Many large Independent companies are installing punched-card tabulating machines to speed up and to provide greater accuracy in their accounting and billing procedures. This one is used by General Tel. Co. of Michigan.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

XUM

pagemaster



IDEAL FOR HOSPITAL USE...

Because it gets calls through quickly and quietly, Pagemaster is especially well suited for hospital use.

Signal units may be made available to administrative staff, nurses, and other circulating personnel in the building. Physicians may pick up a unit upon arrival at the hospital.

Two typical applications of Pagemaster in a hospital are shown at the right . . . a nurse and a laboratory technician.

in his pocket means profit in yours

He may be a business executive, hospital administrator, or holder of a key position in any other organization.

He's a busy man, often away from his desk. How can he be reached *quickly* when he's needed?

Pagemaster—the *selective* radio paging system—supplies the answer with dramatic speed and efficiency. The signal unit (receiver), no bigger than a package of cigarettes, notifies him when his—and only his—call is "on the air." Whether he's in the next office or half a mile away, a pleasant buzzing tone tells him he's wanted. All he has to do is pick up the nearest 'phone.

Since *Pagemaster* signalling will originate at his telephone switchboard, his interest in this product means added revenue for you through leasing of the equipment.

Pagemaster meets a vital need for a legion of your subscribers: industrial plants, construction projects, oil fields, hospitals, civil defense organizations—wherever difficult internal communications problems exist.

For additional information on Pagemaster call, wire, or write

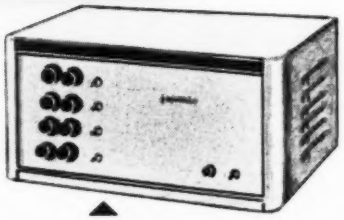
STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Rochester 3, New York

PAGEMASTER SIGNAL UNIT • Completely self-contained, without external wires or attachments, it fits conveniently in coat or shirt pocket.

PAGEMASTER USER • Can be instantly contacted over areas up to several square miles. No matter where he is or what he's doing, he's never out of touch with his office.



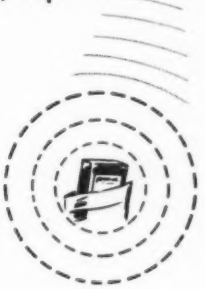
PAGEMASTER TRANSMITTER • Can be conveniently installed alongside switchboard. Coded signals are set by two or three simple dials. Operator can be trained to use the Pagemaster transmitter in 5 minutes' time. A variety of systems offers capacity for signalling up to 3200 units.

HOW PAGEMASTER WORKS

1 Calling party asks operator to page Mr. Smith.

2 PBX operator can put Mr. Smith's code signal on the air in less than 5 seconds.

3 Mr. Smith's receiver responds with pleasant tone, telling him he is being paged.



®Pagemaster is a registered trademark

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GET READY...

GET SET...

GO!

1956 CONVENTION USITA

OCTOBER 15-16-17
CONRAD HILTON HOTEL
CHICAGO, ILLINOIS

General Sessions: Topics of Outstanding Importance—USITA Annual Banquet—Food—Fun—Fellowship

Conferences: Plant—Traffic—Commercial—Accounting—Answers to Your Questions

Independent Telephone Pioneer Association: Annual Business Meeting and Entertainment

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION
Pennsylvania Bldg. • Washington, D. C.

INDEPENDENT

"I know what it's like to sleep all night... we're using IRRADIATED cable!"

NEW... IMPROVED

SUPERIOR TELEPHONE CABLE

NOW contains a polyethylene tape developed by radiation chemistry*

New, improved SUPERIOR TELEPHONE CABLE *maintains* the service longer because the dielectric strength is doubled for greater lightning protection! Maintenance costs are cut because outages are reduced to a minimum.

SUPERIOR CABLE saves splicing time and gives better all-round service too because the deviation in mutual capacitance is now less than 1½%!

And because the insulation is "graded" to conductor sizes . . . the universal transmission standards for loading coils and terminating equipment is closely matched!

SUPERIOR CABLE is accepted by REA and conforms to REA Spec. PE14.

Use all-plastic SUPERIOR CABLE for aerial and direct burial installations . . . it's resistant to moisture, ozone, oils, acids and alkalis! Available with regular spiral shield (5 mil aluminum) or, in certain sizes at slight additional cost, longitudinal shield (8 mil aluminum).

A self-contained tape, marked at one foot intervals up to 10,000 feet, guarantees the footage you receive and lets you measure the footage you use.

For Top Performance at less cost . . . order Irradiated SUPERIOR CABLE today.

"Super-Splice"

Make splices MOISTUREPROOF, WATERPROOF . . . from inside out!

New Superior "Super-Splice" makes the splice permanently as good as the cable. An REA Standard. Write for details.

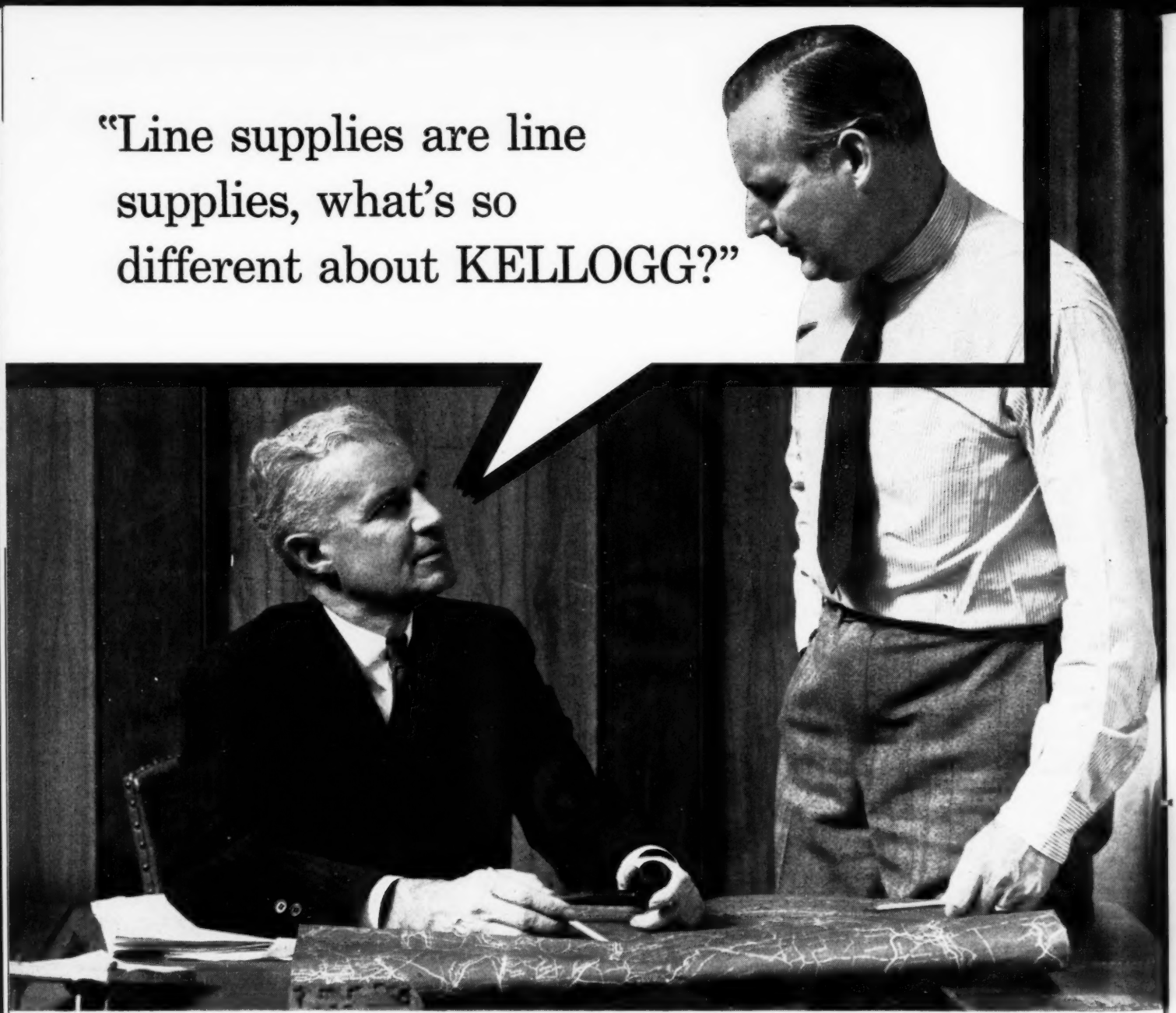
**Irrathene® irradiated polyethylene film, a General Electric product.*

For detailed information and price, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION Hickory, North Carolina

"Line supplies are line supplies, what's so different about KELLOGG?"



Ed: Plenty, Bill. Kellogg gives us so many good reasons for going to them for all our materials and equipment. It's not only the quality of their products, it's all the things that go to make up their line supply service.

Bill: For instance?

KELLOGG A DIVISION OF I T & T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

A Division of International Telephone and Telegraph Corporation

SALES OFFICES: 79 West Monroe Street, Chicago 3, Illinois

Phone: DEarborn 2-0750

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Ed: Delivery for one thing — it's fast and dependable. They've got a well stocked warehouse within quick-delivery distance and a flock of supplier distribution points in this area. The closeness of these supply sources has helped us out often in emergencies. Saves us money on shipping costs too.

Bill: That sounds ok.

Ed: Kellogg has always had everything we've ever needed, I don't care what it was. We can write out an order and know it will be filled. One source-for-everything also saves us a lot of time and paperwork.

Bill: Makes good sense.

Ed: And there's this important fact, Bill, no one has more experience than Kellogg in the handling of line supply orders. They seem to understand our problems and come up with the right answers. We leave a lot of decisions up to them and they always come through with the materials that fit our needs.

Bill: Good products, fast, dependable delivery and helpful service... you're right, Ed, I can see why it's always been Kellogg around here. Better keep it that way!

KELLOGG BRANCH WAREHOUSES AND OFFICES:

6000 W. 51st Street
CHICAGO 38, ILLINOIS
REliance 5-5445

4501 Truman Road
KANSAS CITY 1, MISSOURI
HUmboldt 7085

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ATLANTA, GEORGIA
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ST. PAUL, MINNESOTA
Nestor 5878

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EXPORT DISTRIBUTORS:

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50 Church Street, New York 7, New York

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

ADDED EXTENSIO

YOURS

IN

NORTH

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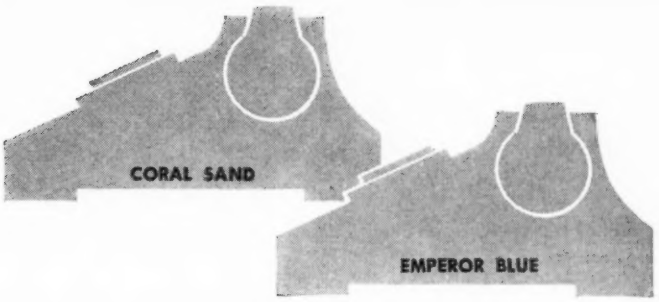
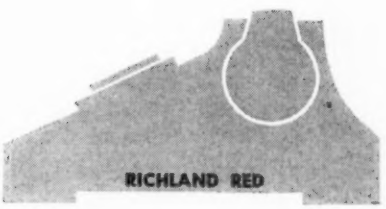
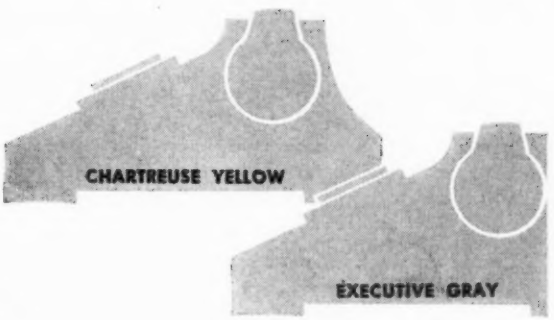
REVENUE

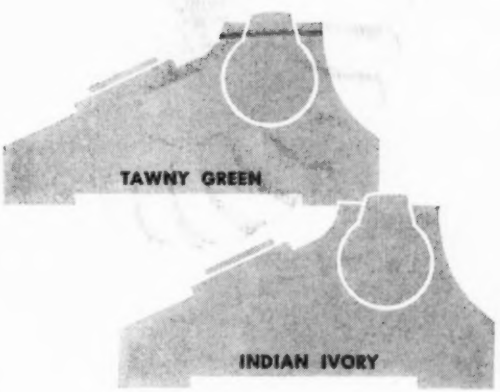


NOW with NORTH TELEPHONES

7 COLOR-TONES







Available for delivery NOW from all NORTH warehouses, NORTH N-541 Telephones in 7 dramatic Color-Tones open new avenues of approach for profit producing revenue!

Telephones in Color-Tones have subscriber appeal! Women love the fresh note a colored extension adds to the kitchen, the bedroom, any room in the house! Men appreciate the smart utility of the colored phone blending with the decor of offices and reception rooms.

Extensions become easy to sell to your subscribers with NORTH Color-Tone Telephones.

NORTH will help you build this profit producing extension business. Write for the NORTH merchandising story to discover for yourself how you can increase your company's revenue, your company's profits with NORTH Telephones in color-tones.

See NORTH COLOR-TONE Telephones on display at the USITA Convention in Chicago, Oct. 15, 16, and 17 in rooms 517-A, 519-A, 520-A, and 526-A in the Conrad Hilton Hotel.

NORTH ELECTRIC COMPANY

SOUTH MARKET STREET, GALION, OHIO

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FLASHES AND PLUGS

GOOD OLD DAYS? There's a Cleveland customer, so the tale is told, who wonders if Ohio Bell's practices oughtn't to be rewritten to agree with today's telephone and financial facts of life.

Recently he dropped a dime in a paystation to make his call. Through one of those once-in-a-million chances, he didn't get his party but his dime was collected.

The operator apologetically took his name and address and assured him he'd be reimbursed by the company. In due time an envelope arrived from Ohio Bell.

Inside was a formal apology and attached to it was a shiny nickel.

•

THANK YOU, CALL AGAIN—IN 20 YEARS. A man who apparently was in a buying mood telephoned the Department of the Interior long distance from Lakeland, Fla., on Sept. 7. He asked to talk to Secretary Fred A. Seaton about buying the moon.

Seaton wasn't in, so the call was transferred to one of his special assistants, Elmer Bennett. Bennett was also out, so Bennett's secretary answered the call.

She wanted to know the nature of the inquiry so she could refer it to the proper authorities.

"I want to buy the moon," the caller said.

The secretary said she didn't think the Interior Department had jurisdiction.

The man, whose identity was withheld, insisted it did. He said he would send a check as soon as title could be arranged.

Under the public land laws a person has to specify that he personally has inspected the land he intends to buy. Officials doubted that the caller had complied with these provisions.

•

DOUBLE STANDARD. "Why did you fire that gorgeous secretary you had?"

"She couldn't spell—kept asking me how to spell every other word when she took dictation."

"I suppose you couldn't stand the interruptions?"

"It wasn't that. I just didn't have time to look up all those words."

•

LINE FORMS TO THE RIGHT. From Paarl, in the Union of South Africa's Cape of Good Hope, comes news that it soon will be possible to put through a telephone call to Hell.

Hell is an isolated area in a rugged mountain region in the Prince Albert district, near Paarl. Its only means of communication with the outside world so far has been a rough trail.

CIRCULATION

Guaranteed circulation of this issue is 11,353 of which 10,826 is paid.

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THE JOURNAL OF THE TELEPHONE INDUSTRY

Since 1901

September 22, 1956

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WESTERN REPRESENTATIVES:
McDonald-Thompson, San Francisco, Cal. Also offices in Los Angeles, Seattle, Dallas and Houston, Tex.; Tulsa, Okla., and Denver, Colo.

Vol. 151, No. 12. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 20 cents per copy (except special issues). Subscription $3.50 per year U. S.; $4.50 Countries in U. S. Spanish Postal Zone; $4.50 Canada; $5.50 Other Countries.

Telephone WA bash 2-2435

XUM

Only 4-Wheel-Drive 'Jeep' Vehicles meet every service emergency!

Line service. Good roads, bad roads or no roads, the extra traction of the Universal 'Jeep's'* 4-wheel drive takes crew and equipment where the line leads, to handle line failure or weather emergencies. It climbs grades as steep as 60°, goes where other vehicles can't go.

Trenching. The 'Jeep'-propelled trencher digs up to 800 feet of clean-cut trench per hour, to speed the installation of cable, conduit and service lines. Travels at highway speeds between jobs.

Maintenance. The rugged time-tested, performance-proved 4-Wheel-Drive 'Jeep' Truck—with special service body—speeds service installations, provides the extra traction to take crews and equipment wherever they have to go, on or off the road.

Whether carrying construction crews with equipment or hauling service trailers, 'Jeep' vehicles work 'round-the-clock, in good weather or bad, in many phases of telephone industry service.

Go-anywhere 'Jeep' transportation helps assure uninterrupted customer service. In emergencies, the extra traction of their 4-wheel drive carries men, tools and equipment through mud, sand, soft earth or up steep grades to get to the line in a hurry, or to go wherever needed when storms or other emergencies threaten service. On the highway, 'Jeep' vehicles travel in conventional 2-wheel drive at top legal speeds.

For hundreds of different jobs, from underground cable installation to line clearance, rugged 4-Wheel-Drive 'Jeep" vehicles serve the telephone industry. Ask your Willys dealer for a practical on-the-job demonstration today.

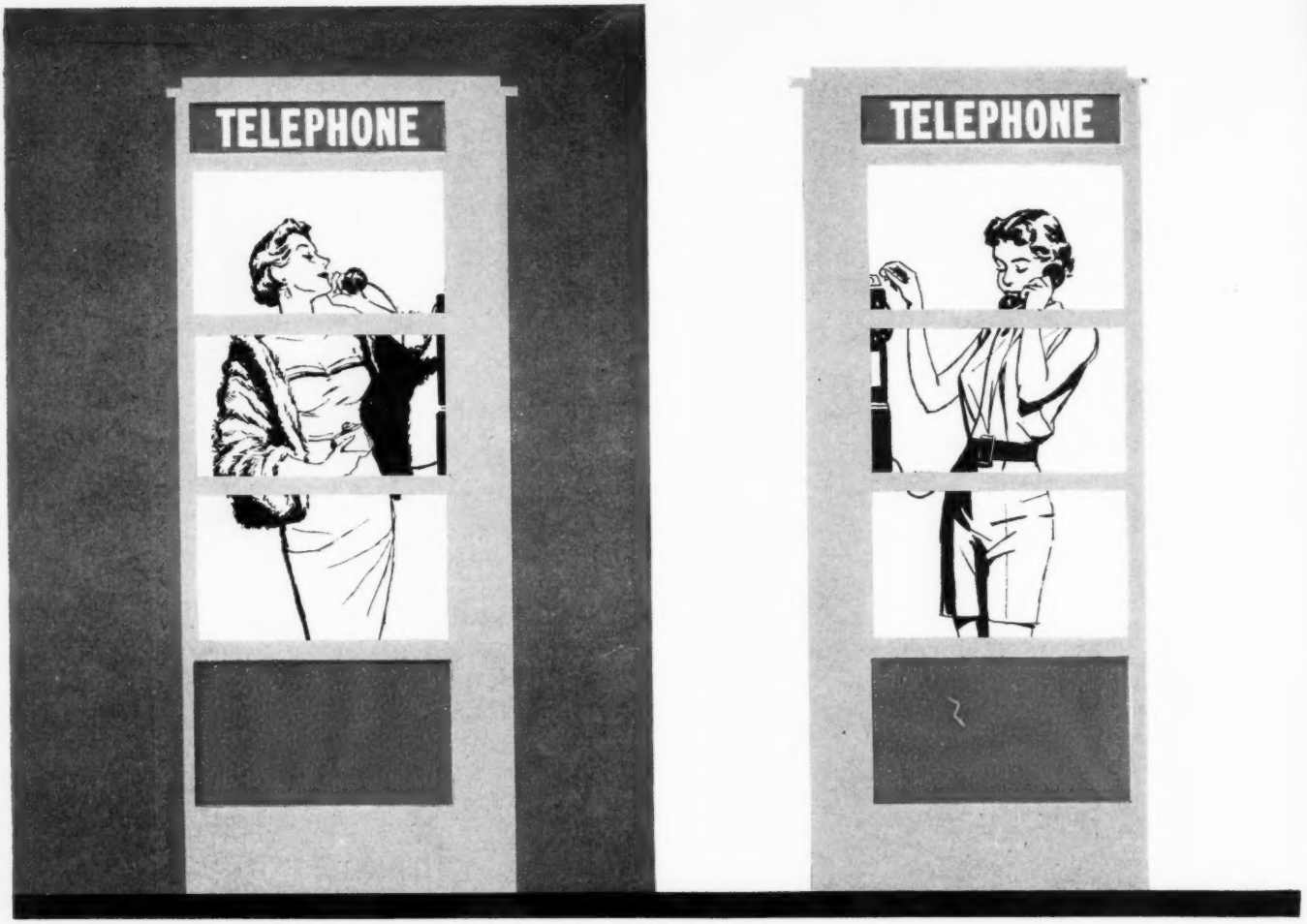
The 'Jeep'®

family of 4-Wheel-Drive Vehicles

WILLYS...makers of the world's most useful vehicles

**Model CJ-5 shown*

WILLYS MOTORS, INC., TOLEDO 1, OHIO



Night and day, these new Alcoa Booths earn money for you

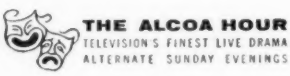
By day it's a brightly colored booth that invites patrons to make that *extra* call. At night it's brightly lighted—easy to see and easy to use. Alcoa's new outdoor phone booths earn revenue for you 24 hours a day.

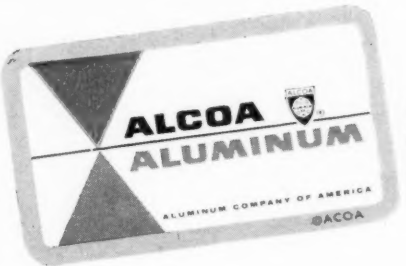
Other than an occasional washing with soap and water, these Alcoa® Aluminum Booths will practically never need maintenance. The surfaces are anodized aluminum, a process developed by Alcoa, which produces a very hard, durable, corrosion-resistant finish. Alcoa Booths stay bright and shiny with no painting. Pencil marks and smudges wipe right off.

Sturdy Alcoa Booths have the full approval of the REA and Underwriters' Laboratories, Inc. The main sections are high-strength, heat-treated extruded shapes. Sections are interchangeable and can readily be replaced if damaged by traffic.

Patrons like the roomy interior of Alcoa Booths—33½" square by 86½" high. Good ventilation is provided by louvers. A handy shelf holds shoppers' packages.

Contact your jobber or write for more information on Alcoa's new money-making booths—another product of Alcoa's Jobbing Division. Aluminum Company of America, 1690-J Alcoa Bldg., Pittsburgh 19, Pa.

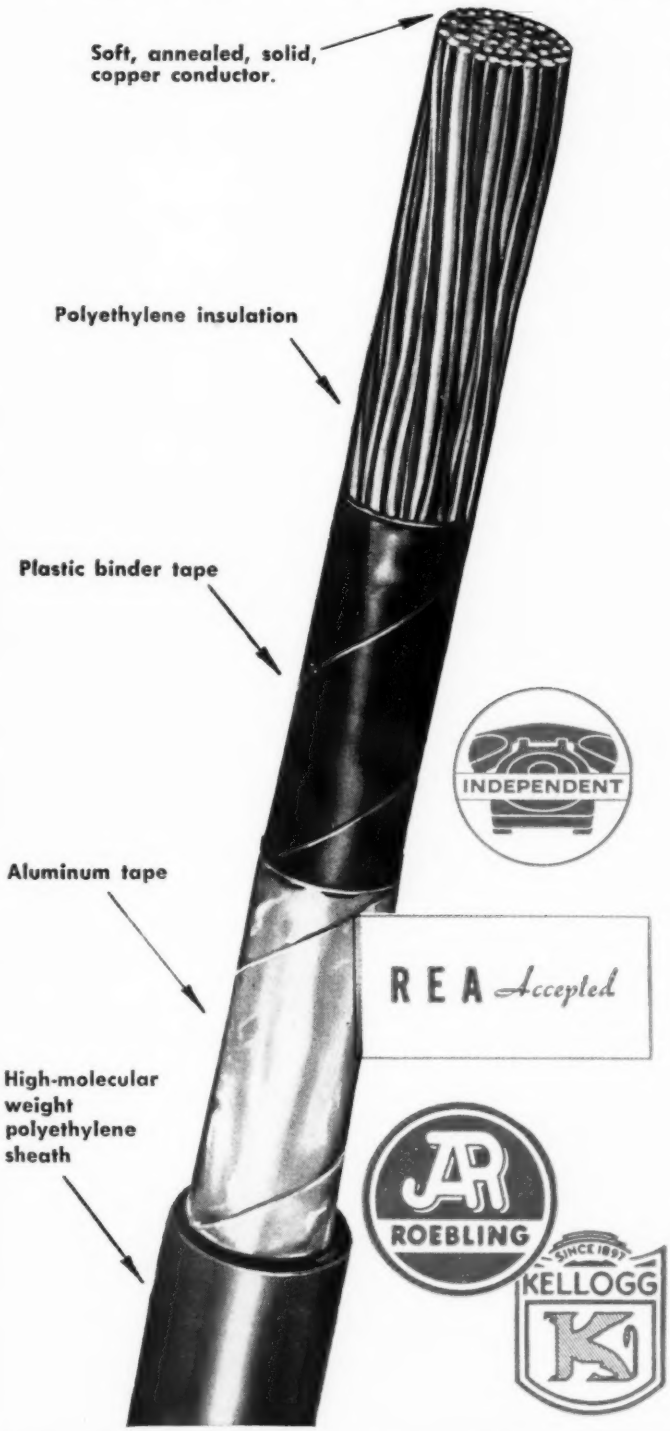




Your Guide to the Best in Aluminum Value

Roebling plastic telephone cable brings big advantages...

PLUS AN IMPORTANT EXTRA



QUICKER INSTALLATION . . . lower maintenance . . . longer service life from Roebling Plastic Telephone Cable. More and more independent telephone companies are continually discovering the *outstanding* value of this cable and its special combination of features:

- Light weight – permits smaller messengers, longer spans – facilitates duct installations;
- High physical strength;
- Easier splicing and terminating;
- Excellent protection against voltage surges and noise from nearby power services;
- Low capacitance, low attenuation, superior dielectric strength;
- Fights deteriorating influences of chemicals, oils and natural elements.

AND, THAT IMPORTANT *EXTRA!*

All Roebling Plastic Telephone Cable is sold to independent telephone companies by Kellogg Switchboard and Supply Company . . . and every purchaser may have the benefit of Kellogg's vast experience in the engineering and installation of telephone systems.

Roebling Plastic Cable is available in conductor sizes #19, 22 and 24 AWG – from 6 to 404 pairs. Order from your nearest Kellogg Switchboard and Supply Company branch or from their General Sales Office, 79 West Monroe St., Chicago 3, Ill.

John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation CF&I

Give him the FINEST!

As a telephone man you and your company are dedicated to give the finest service possible. For that, you must have supplies and equipment that are of the highest quality.

That's where Leich, with its years of experience, can help you. We offer a complete line of products by famous manufacturers known throughout the Independent industry.

When you buy from Leich, you have the assurance that every item is fully guaranteed and has met rigid tests to prove its merits. Every new product is carefully investigated before being added to our line.

You can depend on Leich for prompt, efficient service. Your orders, large or small, are handled by folks well acquainted with the telephone industry and its needs. Next time you order, use the source that offers you prompt service and the finest in materials . . . Leich!

LEICH

in supplies too...

LEICH *offers the best!*

RELIABLE . . . HUBBARD . . . COOK

. . . EVEREADY . . . KLEIN . . . JOSLYN

. . . NICOPRESS . . . EXIDE . . . GOULD

. . . GENERAL CABLE . . . MILLERS FALLS

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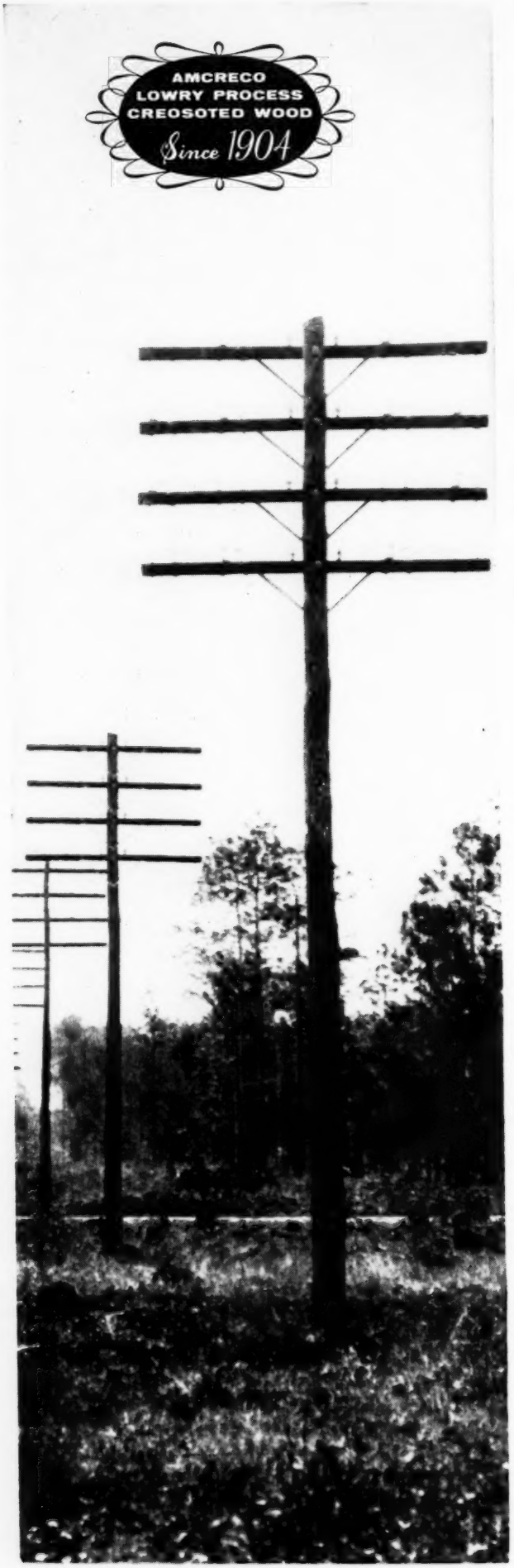
GENERAL SYSTEM INDEPENDENT

AMCRECO
LOWRY PROCESS
CREOSOTED WOOD
Since 1904



Why Creosote is Still the Miracle Wood Preservative

Creosote contains not just one but over one hundred ingredients that are toxic to insects, fungi and all other natural enemies of wood. That's one reason why it has been and still is the most effective wood preservative.

Of course, effective creosote treatment depends on the method of application. There must be careful scientific control at every step in the pressure treating process. During application, the preservative must be measured by precise equipment as it is forced into the wood. Final retention, distribution and concentration must be checked continually to assure the buyer of the best possible product. *This is the type of treatment that you get from Amcreco.*

If you've never been an Amcreco customer or if you've never profited by our years of experience and strategically located treatment plants and sales offices, contact us on your next job. We would appreciate an opportunity to quote your needs.

AMERICAN CREOSOTING CORPORATION

Colonial Creosoting Company
Federal Creosoting Company
Indiana Creosoting Company

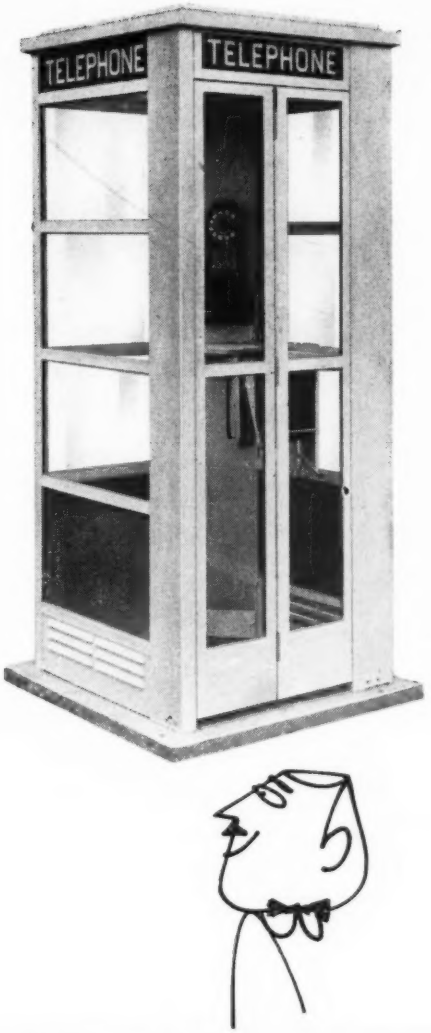
AMCRECO
LOWRY PROCESS
CREOSOTED WOOD

Gulf States Creosoting Company
Georgia Creosoting Company
Kettle River Company

Georgia Forest Products Company

GENERAL OFFICES: LOUISVILLE 2, KENTUCKY

heads turn,

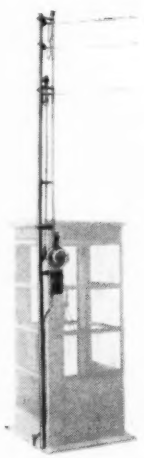


coin boxes jingle . . .

. . . *when you use Alcoa Aluminum Booths!* And it's a merry tone designed to help keep commercial managers gleeful and contented. Smart . . . clean . . . colorful, this booth really draws the eye (*and* the customers!) . . . It's comfortable, too. Roomy, well-ventilated, well-lighted, it makes a friend every time it's used. The Alcoa booth's strong construction keeps maintenance down. Grease and pencil marks wipe off its hard surface easily.

OTHER ADVANTAGES: folding doors with door closer, fluorescent lights, wire inlets, directory shelf and racks. Your choice of red or green lower panels. Booth shipped knocked down with full assembly instructions.

Cat. No. S-2998
Dimensions: 33½"x33½"x86½"
Weight: 360 lbs.



TBM Service Entrance Mast

The TBM Service Entrance Mast provides complete service entrance facilities for outdoor booths. Raises power and telephone lines for ground clearance, looks better, lasts longer. Costs less than any comparable installation. Standard mast has two conduits, insulator, and wire holders. Meter socket, breaker box, flood lights and time switch can be ordered separately.

Cat. No.	Description	Each
TBM-12	12-foot Mast (std.)	$40.50
TBM-14	14-foot Mast (std.)	42.50

"Showing the way" will increase your revenue

Highway Directional Signs tell passing motorists exactly when and where they'll come to an outdoor paystation. They remind them to make that call. The word "Telephone" is printed right on the blue and white sign, while the completing messages, "2 Miles," "1 Mile," and "Here" are separate emblems that adhere fast to the sign. You can order any or all three messages to fit your needs.

Cat. No.	Description	Each
S-7272	Highway Directional Sign	$9.80
S-4133	Emblem "2 Miles"	1.10
S-4132	Emblem "1 Mile"	1.10
S-4131	Emblem "Here"	1.10

Prices are F.O.B. Chicago and subject to change
Automatic Electric Sales Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

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Buy the Power You Need!

ONLY Raytheon TV microwave links offer you this choice

PLUS THESE FEATURES

- **Simultaneous transmission of monochrome or full NTSC color plus program audio**
- **Rugged, versatile—for portable or fixed installations**
- **Available in 6,000, 7,000, 13,000 Mc bands**
- **Uses stable, long-life klystron**

Raytheon KTR-100 series (100 mw RF output) TV microwave links provide reliable, high quality transmission of video and audio at lowest cost. When you need additional power to overcome "grazing" conditions or for longer hops, the extra 10 db power output of the KTR-1000 series (one watt RF output) meets your requirements.

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The following types of BICC Cable are in continuous manufacture for telephone administrations in many countries:— coaxial and balanced pair trunk-route cables for carrier working, audio-trunk cables, paper or polythene insulated exchange-area distribution cables.

We shall be pleased to give you further information from our nearest Branch Office or from our Headquarters in London.

AUSTRALIA *Electrification of the New South Wales Railway Western Line has necessitated a competely new track-side cable scheme covering the 34 miles from Sydney to Penrith. The main cable comprises 6 pairs for 24 channel carrier working and 60 audio pairs for local telephone and control purposes. Many of the audio pairs are terminated at railway stations, signal huts, power substations, etc., in order to provide local facilities. The installation was undertaken by BIC Construction Co. for the N.S.W. Railways Department.*

NEW ZEALAND *BICC are supplying a trunk cable between Auckland and Hamilton for the New Zealand Post and Telegraph Department. BIC Construction Co. are supervising the installation and undertaking the progress and transmission testing. The cable consists of 4 coaxial tubes to provide long distance circuits, together with a surrounding layer of 54 pairs of audio quads to give intermediate local service, these circuits being loaded.*
The cable is buried direct in the ground for most of its eighty-mile route, except when passing through towns, where it is laid in ducts.

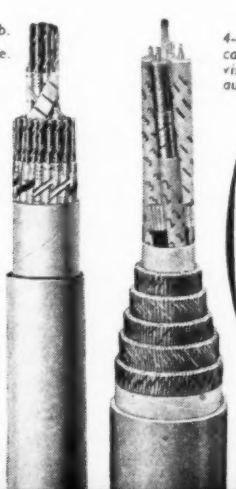
VENEZUELA *BIC Construction Co. have undertaken the jointing and supervision of installation of a 448 pair 20 lb trunk cable to improve the telephone service between Caracas and Maiquetia. With a route length of approximately seventeen miles, the cable runs wholly in ducts along the side of a newly-constructed auto-road linking the capital town of Caracas with the coast. This contract has been undertaken for the Compania Anonima Nacional Telefonos de Venezuela.*

ADEN *To extend existing facilities and to cater for the Colony's growth, a new distribution network has been installed comprising approximately 44 miles of cables specially protected against soil corrosion.*
The new network provides an increase of 3,000 lines and consists of cables of varying sizes ranging from 15 to 200 pairs, twin cables, the larger sizes being of the unit twin type. A short balanced and loaded trunk cable was also installed to link the Town with the new refinery site at Little Aden. This contract was undertaken for the Aden Posts and Telegraph Department.

Left: a BICC jointer at work on a coaxial cable, cutting the tubes ready for jointing. Two typical carrier-trunk cables are illustrated on right.

BICC manufacture every type of telecommunication cable and undertake their installation—anywhere.

24 channel 24 pair 40 lb. carrier telephone cable.



4-tube composite coaxial cable with 18 supervisory pairs and 195 audio-trunk quads.

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We agree with Dave—

using clean PENTA-treated crossarms makes sense

We were putting up our first batch of PENTA*-treated crossarms the other day when Dave dropped by. Dave's our purchasing man, and a man who knows his business. And I figured it would be a good time to find out why he switched us to treated crossarms, so I asked him "how come?"

Dave explained that we wanted the crossarms to last as long as the poles, and the best way to get that sort of service life would be to put PENTA-treated crossarms on PENTA-treated poles. That would mean a cut in replacement costs. Also, insulator pins stay put longer because PENTA prevents rot damage to the wood around the pins. And the bolts hold better, too, for the same reason.

I agreed that treated crossarms sound like good common sense . . . and from the crew's standpoint, I was glad the preservative was PENTA, because it's so clean and easy to handle, even in hot weather.

When Dave told me PENTA-treated crossarms don't cost a penny more than other treated crossarms, I had the whole story. Easy to see why we're going to specify PENTA on all orders for poles and crossarms from now on. Matter of fact, sounds like a good idea for other utility companies, too. THE DOW CHEMICAL COMPANY, Midland, Michigan, Department PE 983C.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Sees FCC adopting proposed accounting rule change covering telephone station apparatus. Congressional investigations into television and radio putting big load on FCC personnel, chairman McConnaughey says. SEC questions gas and electric companies on proper ratio of debt to equity capital.

JUDGING by the few comments received by the Federal Communications Commission before the deadline on Aug. 22, the proposed rule changes on telephone accounting will probably be adopted as final, with little or no change. This rule, which the FCC proposed and upon which it invited comment from all interested parties last July 10, has two general objectives:

First, it will simplify accounting (by all telephone companies subject to full FCC jurisdiction) for telephone station apparatus. This will be done by including the investment in such equipment *on the subscriber's premises* in the "service account" under "Telephone Plant"—from the time the equipment is purchased until it is finally disposed of by the company. Under the present rules, telephone companies are put to the bother of checking such items in and out of various accounts, depending on whether the equipment has been purchased but not installed, or is being temporarily withdrawn by reasons of changes of address, discontinuance, etc. Under the proposed rule, the investment for such equipment will go into the "service account" from the minute it is purchased until the time it wears out, or is destroyed, or otherwise taken out of service for good.

The change will affect not only subscriber telephone instruments, but also such equipment as telephone booths, small private branch exchanges (manual and automatic) and teletypewriters. This form of continuance accounting, popularly known as the "cradle-to-grave" treatment saves a lot of headaches and expense for the telephone company accounting departments.

The second general objective of the proposed rule is to treat the cost of installation, and of the wiring directly associated with equipment on subscriber premises, as *depreciable* plant. Such cost has heretofore been capitalized, since the virtual beginning of telephone accounting in 1933, as *non-depreciable* property because it was felt, at that time, that treatment would result in relatively constant charges to "operating expenses," so that there would be little if any distortion. The experience has been, however, that the non-depreciable classification (which is the same as "retirement accounting") actually results in fluctuating, expense-distorting charges, particularly for small companies. The main argument in favor of depreciation accounting for installation and wiring cost, under the proposed rule, is that it would give a greater assurance of properly matching revenues and expenses, and would prevent radical expense increases during periods of high installation or removal of stations.

One of the incidental effects of the proposed rule change will be that costs of wiring and station installation will be written out of the plant account, *at the time the telephone station with which they are associated is physically removed.* Or, in case of subsequent reconnections without physical removal, incidental loss due to disconnection would be written out at the time of reconnection. The present FCC accounting calls for delaying book retirements of station connections until physical removal of the station itself, but in case of reconnection the additional cost is charged to operating expenses. The proposed change should save time, effort, and expense in the bookkeeping department.

What kind of comment has the FCC received about these changes? So far, it has all been good. The Western Union Telegraph Co. said it had no objection. The United States Independent Telephone Association said it not only had no objection but that the proposed changes were desirable. The American Telephone & Telegraph Co. went even further than that and asked the FCC to move up the effective date of the proposed change from Jan. 1, 1958, to Jan. 1, 1957.

Therefore, it seems quite likely that some time in the near future, and certainly before the end of this calendar year, the FCC will "finalize" this rule. In all probability it will be made effective as of next Jan. 1, 1957.

Too Many FCC Quiz Programs?

Quiz programs are all right for television, but even there too much of a good thing could become a nuisance. The FCC, which has plenty of regulatory problems with television, has also been recently having a problem of too many quiz problems of its own, brought right home to it by Congress.

FCC Chairman George C. McConnaughey is an amiable and congenial man. He likes to be friendly and get along with people, congressmen included. But, even the mild-mannered Mr. McConnaughey thinks that congressional committees might be over doing this business of quizzing the FCC about television. He says the FCC staff has been so busy running up and down Pennsylvania Avenue to the congressional committee hearing rooms, and preparing for the same, that the FCC is falling behind on its own job—that is, to regulate interstate radio, television, telephone, telegraph, etc., under the Federal Communications Act.

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Speaking in New York City on Sept. 12, McConnaughey said that "duplications in congressional investigations of a government agency hurt the public by adding an unnecessary work load on government officials." In an address before the Radio and Television Executives Society, McConnaughey also proposed that radio and television licenses and license renewals be issued for five-year periods. The present legal time is three years.

The FCC chairman reiterated his opposition to too much regulation of private enterprise and praised the FCC for what he termed its "devotion to duty." McConnaughey spoke on the eve of New York hearings by the House Anti-trust Sub-committee, headed by Representative Celler (D., N. Y.). The committee has announced it is seeking to determine if the major television networks have exercised undue influence on FCC actions.

The FCC, Chairman McConnaughey said, had demonstrated full cooperation with such inquiries. He reported that during the last session of Congress the commission and its staff devoted 7,432 man hours to congressional hearings. He continued: "This breaks down to 929 days and 3.6 man-years. Those figures speak volumes. Efficiency in government operations should not permit duplication in congressional investigative hearings because the public only suffers when an agency of government is required to spend thousands of man-hours to answer duplicated inquiries."

SEC Debt-ratio Quiz

The Securities and Exchange Commission has the responsibility for enforcing the Holding Company Act as well as about a half-dozen other statutes involving securities, exchanges, financing, etc. This act applies only to gas and electric companies owned by or affiliated with holding companies in interstate commerce. The main purpose of the act — narrowly passed after stormy debate in Congress in 1935— was to break up the old interstate gas and electric widely scattered combinations into little intrastate or narrowly regional groups. It has nothing to do with telephone companies.

But the SEC took a step, early in September, pursuant to this Holding Company Act, which might very well have some effect on telephone companies. It issued a questionnaire calling for expression of opinion from various sources (by Nov. 1) as to the proper ratio of debt (bonds or other debt obligation including bank loans) to equity capital (common and preferred stocks) in the capitalization set-up of gas and electric companies.

REA Makes Telephone Loans in Two States

Rural telephone systems in Tennessee and Virginia received loans totaling $243,000 during the week of September 3 to 7, the U. S. Department of Agriculture has announced. About 550 farmers and other rural people in the two states will get improved service as a result of these loans. Details of the loans follow:

Concord (Tenn.) Telephone Exchange, Inc.: $106,000, third loan, Sept. 5.

The borrower plans to provide 21 miles of additional line and other facilities to serve 252 rural families in the area who were not included in prior loans. The balance of the funds will be used to equip the existing plant to handle the increasing demand for telephone service. After only two years of operation, many of the system's lines are already overloaded.

The three REA loans totaling $351,000 will enable the borrower to offer new and improved service to 792 farm families and other rural residents in Knox County. The completed system will consist of 106 miles of line.

* * *

Central Virginia Telephone Corp., Amherst, Va.: $137,000, third loan, Sept. 5.

The borrower proposes to provide facilities to serve 298 rural subscribers in its area who were not included in prior loans; also to construct a new unattended automatic central office at Sweet Briar College for the installation of PABX equipment to serve the college. The remainder of the loan funds will be used to complete the system as originally planned.

The three REA loans, totaling $754,000 will finance dial service to 1,301 subscribers. The system will consist of 253 miles of line and four automatic exchanges in Amherst, Appomattox, Buckingham, Nelson and Rockbridge counties. These exchanges, located at Allgood, Amherst, Gladstone and Sweet Briar are scheduled for cut-over shortly after the first of the year.

It might be said, by way of background, that the SEC division in charge of the Holding Company Act has been slowly but surely working itself out of a job. There used to be more than 100 holding company combinations under the act. But the SEC has been so busy since 1935 making little ones out of big ones that there are, today, only a bare handful of holding companies still under SEC jurisdiction. It might also be said that the Democrats had had some mean things to say about the enforcement of the act by the SEC since the Eisenhower administration took over. So, it could be that a "study project" at this time could serve the double purpose of making some useful work for the SEC staff as well as silencing the partisan opposition, or at least making the basis for a counter argument during the political campaign.

Anyhow, to get back to telephone companies, they are liable to wind up in the usual position of innocent bystanders in any forthcoming analysis or report by the SEC as the result of its debt-ratio questionnaire. This questionnaire was sent not only to gas and electric utility companies and corporate affiliates subject to SEC control under the Holding Company Act, but also to federal and state regulatory agencies, insurance and investment companies, banks, underwriters, educators, textbook writers, security analysts and others. The back-of-scenes explanation is that the information sought is something the SEC has been planning to obtain for some time, but is only just now getting around to do. This suggestion, plus the fact (already noted) that the work load on the SEC's division of corporate regulation has been getting lighter in recent months, seems entitled to belief.

The apprehension that exists in utility circles is that the SEC's study might result in some excessively rigid "yardstick" or permissible range for debt ratio to bonds. The SEC's announcement also stressed the importance of achieving the greatest economies possible, which might refer to potential tax savings through debt financing. If the over-all result is to bring regulatory pressure for more debt financing, as compared with stock financing, it would represent a reversal of regulatory pressure of the early thirties. At that time railroads and some holding companies were criticized for incurring

excessive debt and fixed charge obligations.

Receiverships of several of the gas-electric holding companies, which preceded the passage of the Holding Company Act, resulted from their failure, during the depression years, to earn enough to meet fixed charges on top-heavy debt structures. The SEC, itself, noted that as late as 1952 its emphasis was on *limiting* debt (60 per cent maximum) rather than encouraging it.

The telephone industry's interest in the SEC's move to obtain "data" on gas and electric utility debt ratio of capitalization is that the results of this study might be used for comparable purposes to the disadvantage of telephone companies. Bell System companies, in particular, have consistently contended in rate cases that a relatively low debt is desirable for conservative telephone company financing. In other words, telephone companies could come under increased pressure, if the SEC's study should result in the formulation of any so-called "norms" or "reasonable range" proposals for considerably higher levels of gas-electric debt financing.

If SEC recommendations materialize along such lines, it would give some "official" coloration to arguments for higher debt ratios which could be used in subsequent rate cases before state public service commissions. The fact is, of course, that Bell System financing is differently arranged from gas and electric subsidiary financing. Several state commissions, however, have already adopted the practice of "hypothecating" so-called reasonable debt levels in telephone rate cases (in contrast with the actual debt ratio incurred in the particular case) in order to lower the over-all return requirement in fixing rates. So, the outcome of the SEC's move may be the necessity for developing new and stronger evidence and arguments in future telephone rate cases, differentiating telephone capitalization needs from those of gas and electric companies and their affiliates.

Operator 54 Lays A Dragnet

CAST

Operator 54: Georgia Bengough.

Service Assistants: Terry Nejman, Chris Kaplan, Dorothy Slee.

SETTING

The Michigan toll office in Cleveland, Ohio.

11:43 a.m.—A light flashed on her board and Georgia Bengough answered. It was an emergency. A party wanted to reach relatives in Stockton, Cal., to tell them of a critical family illness.

11:45 a.m.—Reached Stockton. The party called had moved to Kansas.

11:50 a.m.—Called Kansas. Operator 54 learned the called party was on vacation en route to Colorado Springs. During the next hour motels on the most probable route were checked.

1:00 p.m.—One of the service assistants contacted the calling party for more information which might help in the search. She learned the name of the company for which the called party had worked in Stockton.

1:10 p.m.—Called Stockton employer for name of Kansas employer.

1:15 p.m.—Called Kansas employer. He remembered that the called party had purchased a new car and the name of the dealer.

1:20 p.m.—Called Kansas car dealer who said he would locate record of purchase for further information.

2:15 p.m.—Car dealer called back with make of car and license number.

2:17 p.m.—Called this information to Colorado State Police who said they would watch the highway for the "suspect" traveling in a new car.

5:15 p.m.—The Colorado State Police found the party, who called in.

5:16 p.m.—Call completed. Case closed.

Long-range Future of REA Co-ops

What happens when REA co-ops pay up their loans? Do they stay in business as a co-op and keep going, independent of the federal REA apronstrings in Washington, D. C.? Or do they look around among business-managed utilities for a chance to sell out at a neat profit to the co-op membership?

These questions are, so far, quite academic for REA telephone co-ops, because the REA telephone loan program has been in operation since 1949 and the usual co-op loan term runs for 35 years. Even for the REA electric co-ops, it is necessary for them to pay up ahead of the required time in order to get clear of their REA loan obligations. But it has been done.

Two REA co-ops are credited with having repaid their loans in full, according to REA sources. The loans were used to build electric systems. The United Rural Electric Co-op (Kenton, O.) and the Hendricks County Rural Electric Membership Corp. (Danville, Ind.) became the fourth and fifth electric co-ops in the 21-year history of REA to repay their loans in full from revenues in advance of required term payments. The Ohio borrower's first note was due in 1963 and its last in 1982. The Indiana group's first note was scheduled for payment in 1962, but its last was not due until 1985.

Presumably these REA co-ops will stay in business as independent co-operative operations. But there is always the possibility that the farmer membership, tiring of the responsibility and demanding requirements of running a utility business, may be disposed to sell out to a business-managed utility company. And that has also happened before, in the REA electric co-op field, and is probably happening right now.

Sell-outs of rural electric systems continued to develop in August as power company attempts to purchase rural electric systems in Wyoming and Alabama were revealed. Shoshone River Power at Cody, Wyo., met on Sept. 21 to determine whether or not they should sell out to the Pacific Power & Light Co. Tombigbee Electric Co-op at Guin, Ala., elected a new board of nine trustees last month, eight of whom publicly announced they are in favor of selling Tombigbee to the Alabama Power Co.

The sell-out situations, if they are successful, will be the first sell-outs of rural electric cooperatives to commercial power companies in Alabama and Wyoming. Both rural electric systems are in good financial condition. Two-thirds of the membership of each co-op must approve any sell-out offer by the power company. Tombigbee serves more than 4,000 consumers, whereas Shoshone serves in the vicinity of 500.

Sell-outs along this line have previously occurred in other areas. It is an interesting development and should be watched with interest by commercial telephone companies, in view of the considerable number of telephone co-operatives being launched in business at this time, as the result of the REA telephone loan program activity.

TROUBLE CLEARING

Why Do We Have Party Lines?

By L. N. MARTIN

WE WERE collecting some data for an article on party-line ringing systems and we were much impressed by the large amount of inventive energy that has been used on this subject. The schemes suggested or patented have been numerous and ingenious. However, some were of the Rube Goldberg type. Only a few have survived the test of practical use.

One plan was the "Lock Out" system. Not only could any one of some 25 subscribers be rung selectively but all other stations were locked out. No other subscriber could disturb the one who had the line—not even if his house caught fire. We are glad that this one did not survive.

As we studied these ringing systems the thought occurred to us: "*Would not these inventors have contributed more to the progress of telephony if they had devoted their time to inventing ways to make party lines unnecessary?*"

No matter how perfect the ringing system, a party line is still a party line. A party-line subscriber has no telephone service whatever, either incoming or outgoing, during the time that some other party is using the line. We cannot say that a four-party subscriber has one-fourth of a complete telephone service. At times he has *no* telephone service and at other times incomplete service.

(NOTE: *In this article we are discussing party lines in urban and suburban areas. The rural line is another problem.)*

Theoretically, four people should be able to work together so as to share a telephone line in a way that would be fair and satisfactory to all, but it does not work out that way. Complaints of party-line interference and abuse pour into the business office, but when Smith complains of Jones and the telephone company representative talks with Jones, Jones promptly complains of Smith and the situation is worse than before.

Cases of property loss and even loss of life due to refusal to release a party line in an emergency are reported frequently in the daily press and in TELEPHONY. Several states have enacted laws making it illegal to "hold on to a party line" when another subscriber needs it to make an emergency call, but convictions may be hard to obtain under these laws as it often involves identifying a person by voice alone.

Some companies have rules limiting the length of a conversation on a party line but these are also hard to enforce. Some have even tried automatic means of cutting off a conversation at the end of a certain period. However automatic equipment cannot distinguish between idle gossip and a conversation of a serious or emergency nature. Much damage might be done by such a device.

PART 51. The preceding article in this series appeared on page 19 of the August 11 issue.

All of these attempts to mitigate the evils of party-line service confirm the fact that such evils exist.

On the other hand the individual line subscriber can at once get dial tone (or operator) at any time day or night. If the line he calls is reported busy (and that line is also a one-party line) he knows that the person he is calling is using the line and not some third party. Individual line service is the only complete and full-time telephone service.

Since party lines furnish such an incomplete and unsatisfactory service, "Why do we have party lines?" Why do not all customers subscribe for individual lines? How did this party-line business get started anyway? We will discuss the last question first.

The younger generation of telephone men may assume that party lines have been with us from the beginning and are now a necessary part of the telephone business. History tells us otherwise. We have read all that is available about the early exchanges—the kind that used table top switchboards, manned by boy operators—and it is quite certain that party lines were not used in those pioneer days. Each subscriber had his own individual (grounded) line to the switchboard. (There was, of course, no rural development at that time.)

However, we find no record of just when or how the party line entered the picture. Our guess is that it was a temporary expedient. Some struggling company could not see its way clear to build a new line out to Jones' house so it asked Jones to temporarily (?) go on a line with Smith, and so it started.

This writer's experience and observation has covered all but about the first 15 years of telephone history so his memory may be of some historical value. The first telephone exchange that he remembers as a child was the Bell exchange in his home town. There were few telephones, as at that time the telephone seemed to be for the elite only. *There were no party lines in town.*

He then saw the beginning of the Independent telephone business in his native town of about 1,500 population. It started as a mutual rural line with no exchange connection; later several such lines were connected together by crude switches. Later, this group incorporated, solicited business in town in competition with the Bell, and an exchange was started with about 300 subscribers. The writer secured his first telephone job with that company which in time also absorbed the Bell exchange. *There were no party lines in the city limits.*

The writer's experience soon included a number of small and medium-sized exchanges in three states, but *he had not yet encountered an urban party line.* He became manager of a

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larger common battery exchange. *Still no party lines.*

Now, it may seem incredible to younger telephone people that a man could advance to manager of a common battery exchange without ever seeing a two-party or a four-party line, but that is the fact and it proves that *at one time party lines were unknown in small and medium exchanges.*

However, as the writer's experience broadened he learned that the Bell companies had introduced urban and suburban party lines in the large cities of the nation. They had a four-party selective ringing system which used pulsating current and a relay in each telephone. This was also used for eight-party semi-selective service in some of the large cities. The much longer average wire mileage per station in the large city was probably a factor that favored this service.

The writer saw his first four-party harmonic ringing system in a new Independent exchange with about a five-position switchboard. This exchange, which was built to compete with an existing Bell office, advertised the very latest in telephone service—many automatic features to speed the traffic, and full-selective party line ringing.

We heard a salesman of one telephone company tell a prospect that four-party service was as good as the competing company's individual line service because the bell would ring only when that particular party was wanted, and the rate was much lower. (Of course, this salesman did not tell the whole story about party lines.)

The harmonic ringing system (which was the first of the several multi-frequency ringing systems now in use) was an Independent development and we believe that much high pressure salesmanship was used in its introduction.

Four-party harmonic service soon became common in Independent exchanges and thus the use of party lines was extended to smaller and smaller offices.

Why do not all customers subscribe for individual lines? Let us ask the subscriber. His answer will fall into one of two categories: (1) "I would prefer an individual line but I cannot afford the higher rate for that service," or (2) "I ordered an individual line more than a year ago but the telephone company cannot or will not furnish it."

Now let us ask the telephone man. His answer will also fall into one or both of two classes: (1) "I think it is good business to have a bargain counter of party lines for those who cannot afford better service," and/or (2) "I could not possibly get the material or the money to give individual lines to every one in my town."

However, some telephone men may say: "I never gave the matter much thought. I know that party lines cause me a lot of grief but that is just part of the telephone business. We have always had party lines and always will have them." (We have already proved the fallacy of that last statement.)

Let us examine some of these answers: What about the subscriber who says that he cannot afford the one-party rate? The *relative* cost of telephone service is now lower than it has ever been. Of course, the rates in dollars and cents have gone up but this increase has lagged far behind the increase in the cost of most other necessities and luxuries.

And, what is more important, the over-all increase in telephone rates has lagged far behind the increase in the average personal income. Looking at some of our personal records we find that at one time it took 2.2 per cent of our paycheck to pay the telephone bill.

Some years later the telephone bill had gone up quite a bit but our salary had more than kept up with it. It now required only 0.9 per cent of our paycheck to settle with the telephone company. Perhaps some of those who think that they cannot afford the best telephone service are just having a "hangover" from a by-gone era.

Of course, there are some people who do all their shopping in the bargain basement. The only thing they consider is the price tag. Many of these would buy a better grade of service if the telephone company had no bargain basement stocked with party lines.

Now, how about the subscriber who has ordered an individual line and is still waiting for it? We all know about the shortages of equipment during and immediately following World War II. Telephone companies were hard hit. They could not supply those who had no telephone service whatever, let alone those who wanted a better grade of service. During the war and post-war period all companies accumulated a large backlog of orders for the upgrading of service. *In our opinion, the fact that so many people were asking for individual lines proves that subscribers want the highest grade of service and that most of them do not hesitate to pay the present rates.*

These shortages are now a thing of the past but it takes time to build additional plant and those who have *no* service must be taken care of first.

Many companies have now caught up with their orders and we see no reason why all companies should not do so at an early date. As to capital, we believe that any company that has adequate rates and the know-how to run a telephone business can now secure the capital required.

Can the telephone company provide party-line service at a lower cost than individual line service? Yes, but the difference is not nearly as great as is generally thought.

We do not know of any real cost study that has been made to determine the relative cost to the company for the various classes of service. Such a study would be very complicated and expensive.

When a company has determined the total revenue which it should have, a rate schedule is prepared in which the total amount is distributed among the classes of service, largely by custom. The new rates will total more but the ratio between any two classes of service will remain about what it was before.

Let us look at some of the differences in cost between a one-party and a four-party station: The cost of the instrument, inside wire, protector, and drop wire is either the same or is *higher for the party line station.* Higher, if a special ringer, a cold cathode tube, and/or three-conductor inside wire is required.

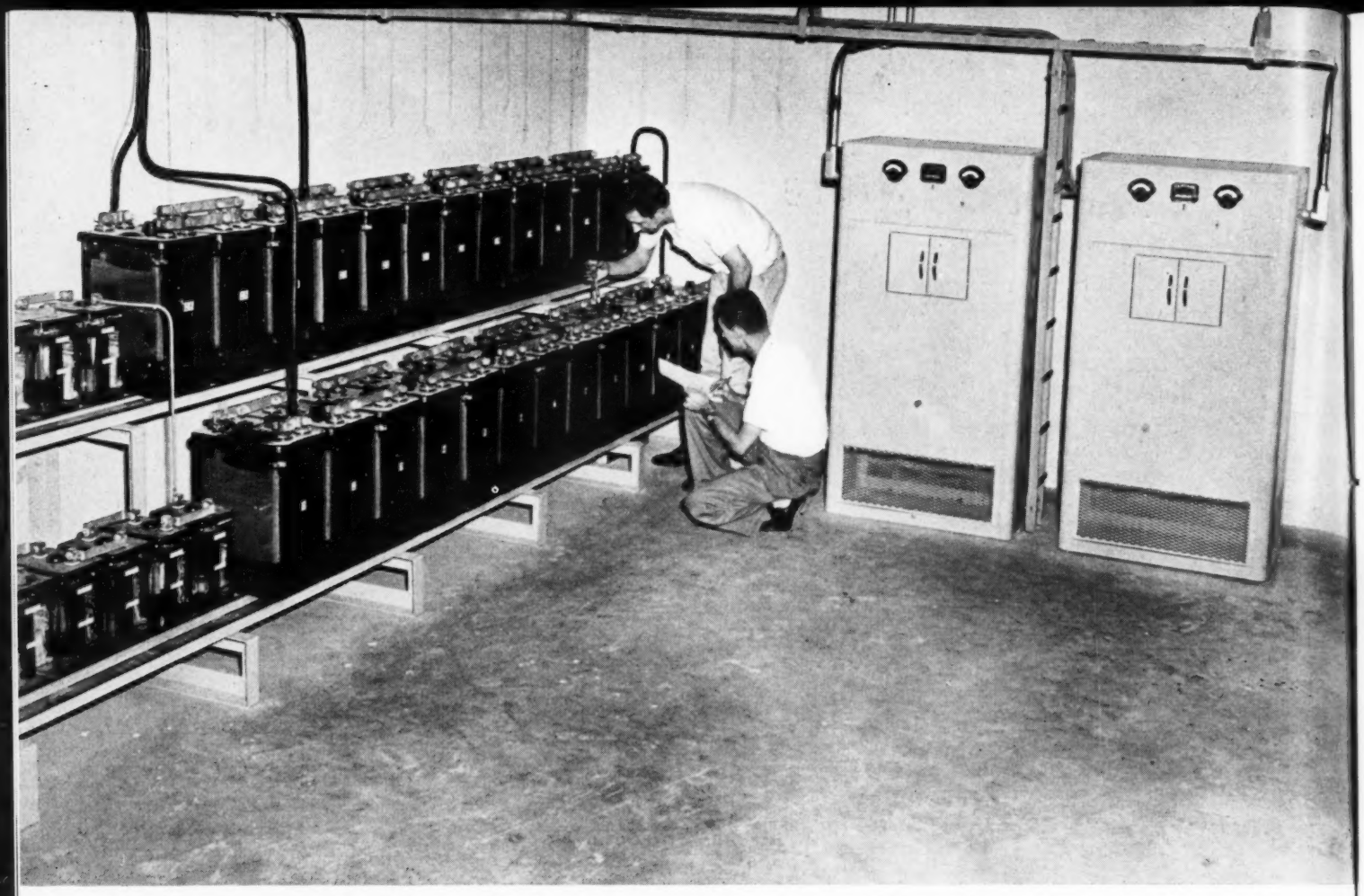
The central office equipment always costs more when arranged for party-line service. Some of the extra items are: Fourth wire in the connector multiple, extra secondary switches, more complicated intercept equipment, reverting call equipment, more complicated toll billing equipment, etc.

Maintenance costs are also higher for party-line central office and station equipment. This is one item that is being measured by many of the larger companies and a definite weight is added to the maintenance expense units and the trouble units for the extra equipment required for party-line service.

So far the cost per four-party station is higher than for the one-party station. However, this is offset in the outside plant where there is a saving in favor of the party-line station, but this saving is by no means one-fourth. A 100-pair cable *in place* does not cost four times as much as a 25-pair cable. The same pole line and the same conduit will carry either size and the cost of placing the cable is about the same for both sizes.

The idea that a four-party station uses one-fourth of a cable pair while

(Please turn to page 45)



It is important to use the right type of hydrometer, not automotive type, to check specific gravity of cells. Keep records on each cell by number.

Operation of Stationary Batteries

By K. A. VAUGHAN

STORAGE batteries serve two principal functions in the operation of telephone systems: (1) to supply emergency current in the event of failure of the motor-generator set, rectifier, transformer or other power failure, and (2) to keep the noise level on the talking circuits very low. Storage batteries, therefore, in addition to performing constant, routine, daily service can mean the difference between an operating or a "dead" system at a time of emergency when rapid communication is of the utmost importance.

Three Types of Plates

A battery is composed of cells and the cells are made up of positive and negative plates. Plates of pure lead give the longest battery life and are the most expensive. Plates composed of an antimony-lead alloy are widely used when the service life required is not likely to be as long as for pure lead. For example, when the office is to be replaced in the next five to 10 years, an antimony-lead battery would be indicated, but if it is to remain in service for a longer period then calcium-lead batteries should be considered.

Telephone message transmission and automatic switching mechanisms are operated on dc current. This current may be supplied by a motor generator or by a transformer and rectifier. The transformer, of course, steps down voltage from ac supply lines and the rectifier changes the ac to dc and supplies the circuit with the required current.

When a motor-generator is used, the motor runs off an ac power line and turns a dc generator to supply the required current. The storage battery comes into play when the main power supply, the motor generator, or the transformer or rectifier fail.

Normally, when all current is supplied by the motor generator or rectifier, batteries are either being charged by the motor generator or rectifier, or being maintained in a fully charged

Mr. Vaughan is Manager of Field Engineering of Gould-National Batteries, Inc. of Trenton, N. J.

condition. Thus, an automatic system supplies emergency demands with little attention from telephone personnel.

Installation Procedure

The battery can be installed in any available location, provided it gets some ventilation and not too much heat. It should not be exposed to the direct rays of the sun, nor should it be near steam pipes, radiators, or other heat-generating equipment. A warm battery tends to self-discharge at an accelerated rate which not only increases the load on the power source to keep it fully charged, but tends also to shorten battery life. When installed without a rack, enough space should be allowed above the battery to permit water to be added and hydrometer readings to be made.

Before unpacking the battery, the battery rack should be put in place. The battery rack should be so located that all cells are easily accessible for maintenance purposes. The rack should be leveled so that it sits firmly. In addition, it should not be grounded. It should be insulated from the floor, and when two or more racks are installed they should be insulated from each other.

When uncrating a battery the usual precautions necessary when unpacking glassware should be taken (batteries used in telephone systems have either plastic, glass or rubber jars). Remove the top and sides of the boxes in which the cells are shipped and slide the cells or trays out of packing boxes. Do not lift cells by terminals. Lift them by supporting from beneath.

In installing a battery:

(1) Have all cells placed on the rack before making any connections.

(2) Clean all contact surfaces and coat with a thin film of vaseline or other non-corrosive grease. The cell terminal may be cleaned by using a wire brush. Lead-plated copper connector contact surfaces may be cleaned using No. 00 sand paper or a suede brush. Care should be taken not to remove the lead plating.

(3) Locate the cells in a straight line in the center of the rack. Start in the center of the row and put connectors in place (positive to negative) lining cells up with a cord. Check all connections to determine that polarity is correct and that no cells are installed in reverse. A voltmeter may be used as a final check. The over-all battery voltage should equal two times the number of cells in series.

(4) After installing fully-charged batteries, make sure that all connections are tight; that each cell is properly connected; that the electrolyte is not below the low level mark. Do not add water to the battery at this time unless to raise level to low level point.

(5) The positive terminal of the battery must be connected to the positive side of the system and a negative terminal of the battery to the negative side of the system. A suitable scale voltmeter should be used to check the polarity of the system and battery.

Selecting the Pilot Cell

Usually one cell is selected in the battery to be used as the pilot cell. Select a cell conveniently located and of average temperature for the pilot cell. If the battery has some cells equipped with charge indicators, it is recommended that the pilot cell be any except those equipped with charge indicators.

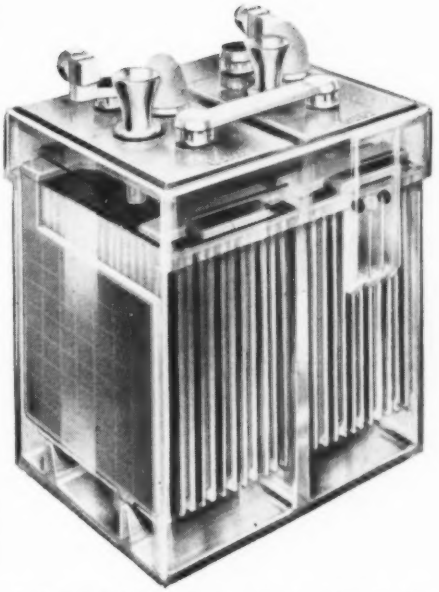
Many people stencil the letter "P" on the cell selected as a pilot cell.

Numbering Cells

Cells should be numbered in consecutive order beginning with the cell connected to the positive terminal of the system.

Adjusting Electrolyte Level During Installation

Battery manufacturers adjust the electrolyte level to the correct high level after they have completed the initial charge at the factory and have placed the battery on float. The stationary cell will have a certain amount of gas trapped under and in the elements following this charge given at the factory. When the cells are shipped, this gas is liberated resulting in the electrolyte level decreasing slightly. If no acid has been lost during transportation, it is normal to find the electrolyte level restored to high level after the freshening charge. Actually, during the freshening charge, the electrolyte level may go above the high level mark for a short period.

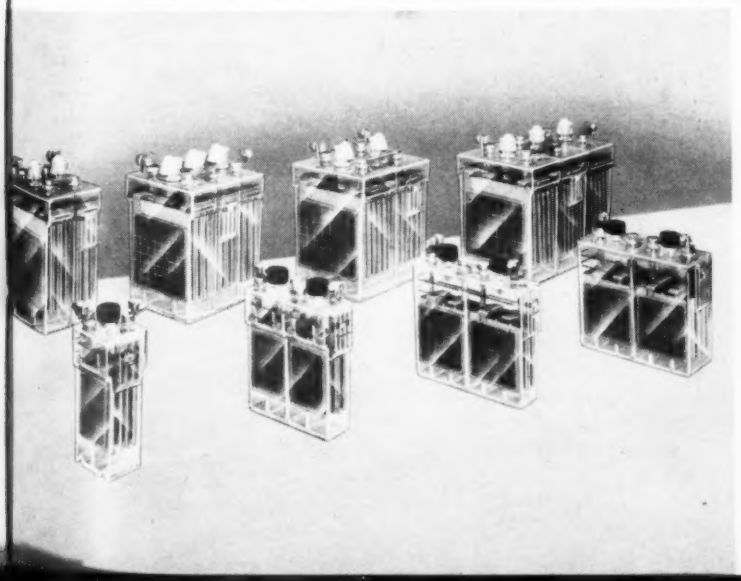


Cell for telephone service in plastic jar. Note charge indicators in cage on front side. Funnels for easy water addition are seen in cover. Porous ceramic domes permit venting of gas generated during charging.

Freshening Charge

After the battery is installed, give it a freshening charge to restore all cells to a fully charged condition. If there is no limitation to the voltage that may be used, charge at the finishing rate

LEFT PHOTO: Cells in many capacities are made for telephone service. These cells have plastic jars and charge indicators.
RIGHT PHOTO: Cells for battery service are made as large as these shown at a large station. Jars are of rubber.



XUM

until there is no increase in specific gravity over an eight-hour period.

During the freshening charge there will be an increase in electrolyte level and it may go above high level. This is because gas is being restored in the cell that was lost during transit or during standing on open circuit.

Do not remove any electrolyte at this time even though level is above high level. If it was necessary to add acid or water because of electrolyte being lost during transit, use the cell received with the lowest level as the pilot cell for this charge.

The correct fully charged specific gravity obtained at the end of the freshening charge should be 1.210 to 1.220 at 77°F. Adjust electrolyte specific gravity to this tolerance if necessary.

If there is a limit to the voltage that may be used for this freshening charge, follow the battery manufacturer's instructions for constant voltage charging.

After the freshening charge is completed, place battery on normal float charge for 24 hours and then adjust the electrolyte level to the correct high level.

Record individual cell specific gravity and voltage by cell number and keep for future reference.

Method of Charging

FULL FLOAT

The modern telephone central office power plant is designed for the full float method of charge control. This is only possible when the charging equipment is of the constant voltage output type and the charging equipment is in operation continuously and connected to the battery and load circuits.

Both motor generator and rectifiers are available with a constant voltage output characteristic. It is not possible to operate a battery by the full float method when constant current output characteristic rectifiers are used.

Maintain an average voltage of 2.15 volts per cell at the battery terminals for all types of cells except Planté and lead calcium cells.

Record specific gravity of pilot cell at monthly intervals.

Record specific gravity of each cell quarterly.

Although the full float method of charging is in widest use today, many batteries are being charged by other methods.

Continuous Variable Current

The continuous variable current method of charge regulation may be used when the rectifier has a constant current output characteristic. With this method, the charger is operated continuously, being connected to the battery and load circuits at all times. Adjust the rectifier output to such a low rate that it only returns the battery to a fully charged condition at the end of the lightest load period of the week. (At most installations this is early Monday morning).

With this method, it is normal that the battery will discharge during daylight hours. It is also normal for there to be a gradual decrease in specific gravity of the battery throughout the week and specific gravity will only return to the fully charged condition at the end of the lightest load period of the week.

To check and determine the correct charging equipment output for continuous variable current method of charge regulation use the following procedure. Starting with a fully charged battery, record specific gravity and adjust rectifier output to an ampere value equal to 40 per cent of the busy-hour ampere value. Check at weekly intervals (at the end of the lightest load period of the week) to see if specific gravity has decreased. If specific gravity is still at maximum, reduce the rectifier output one step or about 5 per cent and then check again one week later.

Continue this checking and gradual reduction of rectifier output until there is a decrease in specific gravity. Allow plant to operate for another week with no change in rectifier output and recheck at end of week to be sure there was a downward trend in specific gravity. The previous procedure will establish the rectifier output that is just short of the correct value. Then increase the rectifier output to that previous value that maintained the battery and leave at this value. No further change should be required unless average load changes.

Record specific gravity of the pilot cell at weekly intervals at end of light load period of week.

Record specific gravity of each cell in the battery quarterly.

With the continuous variable current method of operation, equalizing charges are seldom required and should be given only when quarterly readings show that an equalizing charge is required. An increase in the spread of specific gravity between cells in the battery indicates an equalizing charge should be given.

High-Low Voltage Control

High-low voltage control was extensively used in the past and many plants with this type of control are in service. A start charge voltage slightly above 2 volts per cell is recommended. Approximately 2.02 volts per cell is just about right. The cut-off voltage between 2.26 and 2.30 volts per cell is customarily used. The correct charging equipment output will depend upon the relation of battery ampere hour capacity to ampere load.

Undercharging will result if charger output is too high because voltage will be raised and charge stopped before the battery has been fully charged. Overcharging will result if charger output in amperes is too low. Usually a charger output ampere setting equal to the peak ampere load is a good value to start with.

Record specific gravity of pilot cell at weekly intervals. Record individual cell specific gravity quarterly. Record data and quantity of water added at each water addition.

Water should be required at about three-month intervals. Excessive water requirements indicate overcharging which should be corrected either by reducing high voltage cut-off setting or by increasing charger output depending upon which is incorrect. A downward trend in specific gravity of the pilot cell indicates undercharging in which case a slight reduction in charger output should be made and the low voltage start value should be checked.

The low voltage start charge voltage setting determines the extent of discharge before battery is recharged. If it is found that battery discharges more than 10 to 20 points in specific gravity before charge is started, it indicates that low voltage start charge relay setting should be adjusted upward but not above 2.05 volts per cell.

With the high-low voltage method of charge control, equalizing charges are seldom required. Give an equalizing charge when the quarterly individual cell specific gravity readings show an increase in the spread between maximum and minimum specific gravity between cells in the same string.

Manual Cycle Control

When operating batteries by charging them periodically, the longest charging period that is practical should be used and the charger output should be that value which restores the charged condition of the battery at the end of the charge period to a specific gravity 10 points under the last equalizing charge values.

Check at the end of the regular charge and be sure that specific gravity is below the last equalizing charge value. Otherwise overcharging may be occurring each time the battery is charged.

Give the battery an equalizing charge once a month. Usually power plants being operated by the cycle or periodic

charge method do not have a voltage limitation when charging the battery.

When time permits, give the equalizing charge following the regular charge by charging at the finishing rate and continuing charge until there is no increase in specific gravity of the pilot cell for four consecutive hourly readings. If it is necessary to use a higher rate than the published finishing rate for the battery, a higher rate may be used for this charge.

If the eight-hour discharge rate is used as a charge rate, continue the charge until five unchanged specific gravity readings of the pilot cell are obtained taken at 15-minute intervals.

If the charge rate is less than the eight-hour rate, increase the time interval between readings in proportion. That is, if the charge rate is one half the eight-hour rate of discharge, use three-minute intervals between readings. If necessary to use a higher rate than the finish rate, use the lowest rate that completes the charge in the time allotted.

Equalizing Charge

An equalizing charge is a special charge to a battery to restore all cells to a fully charged condition. The records will determine when an equalizing charge is required.

In full float service, give an equalizing charge once a year and whenever the specific gravity of the pilot cell shows a downward trend or/and whenever the quarterly specific gravity readings show an increase in the spread between cells of minimum and maximum specify gravity. A downward trend in the monthly specific gravity of the pilot cell indicates low float which condition should be checked and corrected.

Normally, equalizing charges are seldom needed by batteries being operated by the continuous variable current method or by the high-low voltage method.

Constant Voltage Method

The time required to give an equalizing charge by the constant voltage method will depend upon what constant voltage is used and the battery temperature.

Raise the voltage to the maximum permitted and continue the high float until a constant period is obtained for the number of hours shown in the respective tables for that voltage and battery temperature. The constant period is one in which no increase in specific gravity occurs after the current to the battery has tapered to and remains constant.

When voltage used is one other than one in the table, determine the number of hours in proportion.

When the maximum charge voltage to the battery is limited to less than 2.30 volts per cell the specific gravity will be slow in showing an increase. After the number of hours charge indicated has been given and the float voltage returned to normal, the specific gravity may show a gradual increase during the next six weeks of normal float operation.

The following table presents the time required to give an equalizing charge by the constant voltage method for antimony lead and Planté type cells (special instructions will be required for the operation of calcium-lead batteries):

ANTIMONY LEAD AND PLANTÉ CELLS
Equalizing Charge By Constant Voltage Method

Avg. Cell Volts	Battery Temperature 55°F	60°F	65°F	70°F	75°F	80°F	85°F	90°F	95°F	100°F	105°F
	Hours Constant Period										
2.20	125	105	90	75	65	55	45	40	32	26	22
2.24	85	70	60	50	40	35	30	25	21	18	15
2.25	75	65	55	45	38	32	27	23	19	16	13
2.26	70	60	50	40	34	29	24	20	17	14	12
2.30	45	40	35	30	23	20	16	14	12	10	8

Battery Water

Water for stationary storage batteries is all too often not given adequate thought. Impure water, or too little water, can ruin a battery. Too much water will dilute the electrolyte and lower the specific gravity as well as cause cells to overflow.

The first rule to observe in adding water to batteries is that it be free of harmful impurities. Distilled water is the best. It can be purchased or, if used in sufficiently large quantities, be processed locally by various ion exchange units.

In most parts of the country, the public water supply is satisfactory for battery use. But, public water should always be tested first. In the following table are listed the maximum impurities that can be tolerated in a battery:

	PPM	*PER CENT*
Total Solids	500	0.0500
Fixed Solids	350	0.0350
Organic & Volatile Matter ..	150	0.0150
Chlorine	40	0.0040
Iron	4	0.0004
Nitrates & Nitrites..	40	0.0040
Ammonia	5	0.0005
Manganese	.007	0.000007

Impurities accumulate and build up. Water evaporates leaving the impurities and solids behind in the battery.

It may be of interest to know that fluorine, in the amounts normally added to the public water supply to reduce tooth decay, is not harmful to batteries according to tests run at the Gould laboratories in Depew, N. Y.

The water level must be correctly maintained. Most batteries for stationary use have maximum and minimum water levels marked on the jars of the cells. Don't let the water fall below the lower mark and do not fill above the upper mark. If the electrolyte level (mixture of water and sulphuric acid) is allowed to fall below the top of the plates, they will dry out and become sulphated. The capacity of the battery will be reduced because the total area of all the plates is not contributing to the output. If the plates remain dry for any length of time, the battery will be ruined.

If the cell jars do not have maximum and minimum filling marks, keep the electrolyte level above the top of the plates at all times.

If too much water is added (above the maximum line), the electrolyte may overflow. Spilled electrolyte is a hazard because it is corrosive.

Water should be added before the battery receives its periodic booster charge and not after. Charging helps to mix the water with the electrolyte and gives a uniform, true specific gravity reading which indicates whether or not the cells in the battery are properly charged.

Most often used are simple glass pitchers. Be sure that they are clean and have a good pouring lip. Do not use a metal container because metal will contaminate the water.

Some plants use a rubber syringe for accurate, controlled filling. The water to fill the syringe is taken from a container which should, of course, be of glass and be clean.

Avoid filling cells from a hose connected to a public water system through a faucet. Even if the water is approved for battery use, minor accumulations of rust in the pipes may suddenly break loose and be carried into the cells. It is also more difficult to regulate the flow of water and greater danger of over-filling and splashing electrolyte. Fill a clean glass container with tap water, if approved, and let it stand. Let the water run until clear water without rust color flows. All settled solids should be filtered out. The container should be marked "for battery filling only."

(Please turn to page 46)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

IN AN INTERESTING letter from Richard R. Mann, 8002 A.U. Signal Section, APO 201, San Francisco, Cal., who presently is in Japan, reference is made to a suggestion which appeared on this page in the July 23 issue that it would be a good idea to dial direct through PBX switchboards to the extensions. Mr. Mann's letter states in part as follows:

"A good many of the PBX installations in both the Tokyo and Yokohama areas have that service now. Another feature of the system here is that you can dial from a PBX extension in one city (Tokyo or Yokohama) direct through to a PBX extension in the other city.

"The telephone service here is generally very good but not on a par with Stateside service, yet they have many services that the American systems could very well use.

"Our main trouble in the states is that we have the best telephone service in the world and, knowing that we have it, blinds us to many advancements and services, made and used in other parts of the world."

Information such as this confirms our belief and prediction that direct dialing into large PBX systems will be made available for public use in this country in the not-too-distant future.

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While attending a hearing in the Court of Claims Building recently in Washington, D. C., we used an old-style telephone booth that had a blue Bell lamp shade installed over the directory shelf.

This type of shade was at one time quite common, but this is the only one we have seen for years. They are practically antiques now as there must be only a few of them remaining in service.

The "blue bell" is still with us, however, and our readers may be interested in how it came into being. We are informed that Angus Hibbard, general superintendent of the AT&T back in the late 80's was responsible for the blue Bell System trademark we know so well today. He and his associates were so gratified at the success of their new long-distance service that they wanted a dignified emblem to proclaim themselves a first-class business institution.

In his book titled, "Hello-Goodbye," written in 1941, Mr. Hibbard explains the origin of the blue bell emblem as follows:

"Tramping lower Broadway, studying signs of many kinds, I had come to believe the best color scheme for such a sign would be blue on white, with plenty of blue.

"Alone in my office, with samples at hand (a Greek cross, a shield and a flying figure furnished by various artists) I took a large pad of paper and tried to study the question from bottom up.

"We wanted a sign for Alexander Graham Bell's telephone. With that as the fundamental, I sketched the outline of a bell.

"To the next question, 'What kind of telephone are we to advertise?', there was but one answer, the long distance telephone. And so I printed within the outline of the bell 'Long Distance Telephone.'"

•

"'Main 6,' Washington, D. C., is one of the busiest of telephone numbers, and to explain why this is so, no more need be said than that it is the number of the White House PBX. No President, with the possible exception of McKinley, ever used the telephone so frequently as does Mr. Roosevelt."

The above is quoted from the Michigan Bell magazine of 50 years ago.

•

Lifting heavy storage battery cells to the top tier of a rack invariably proves to be a rather difficult task. Not only are these cells extremely heavy, but they must at all times be handled with special care in order to prevent damage. Most installers breathe a sigh of relief when the last cell is in place and undamaged.

We visited a large installation recently where this difficult and back-breaking problem had been solved in a most satisfactory manner. A small, manually operated hydraulic lift made this task practically effortless and safe.

With this device, loads up to 500 pounds can be lifted to any height between 4½ and 54 inches. A safety overload release is set to refuse loads of more than 600 pounds.

This unit also has exceptional maneuverability, plus a short turning radius. A detachable handle operates the lifting mechanism. The foot brake has a trigger release. A 22-inch square platform carries the load.

This device can no doubt be used on many jobs around the exchange where heavy objects must be lifted with safety and care.

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Coronet magazine carried an article on the pileated woodpecker titled: "Nature's Power Drill" in its July, 1956 issue. It reports that when scientists at Pennsylvania State University were asked by a group of power companies to help them outwit a bird, they thought the job would be easy.

They changed their minds though when they saw their feathered opponent attack a power pole and rip out a hole 3 inches deep, 9 inches wide and a foot long.

Then they watched him go to work on heavy metal mesh wrapped around a pole and cut through it.

It is reported that so far the biologists at Penn State have failed in their unique mission.

•

We continue to be amazed at the rapid increase in the number of outdoor pay-station booths.

Some of the locations selected are no less amazing. In Philadelphia recently

we saw five of these booths lined up along the sidewalk in a parking lot.

They also are now making their appearance on railroad station platforms in some areas. This would appear to be a very good location for often people leaving or arriving in town will make a call if a pay telephone is available.

We recently noticed a booth installed just outside a White Castle hamburger house in Washington, D. C., that also had a pay telephone on the inside.

It is quite evident that all of these locations pay dividends because otherwise the booths would be removed.

•

Since publication of the item on this page in the July 28 issue concerning the shortage of qualified engineers in the communications field, we have received letters from two engineers interested in obtaining a position in the communications field, but to date have not been able to locate a position commensurate with their ability.

We are sorry that we are not permitted to give you these men's names, but we have advised them to run an ad in TELEPHONY and also to write the various Independent operating and manufacturing companies. It does seem a pity that the services of qualified engineers are required by industry and that these men are available, but it proves extremely difficult to get the two together.

We will always be pleased to assist in any way possible with this problem.

•

The writer recently rode from Columbus to Galion, O., with Bob Stone, of the North Electric Co., in an automobile equipped with seat belts. Now, Bob is an excellent and careful driver, and we had nothing to fear, but we wore the seat belts for the entire distance just to see how the new safety device worked.

Much to our surprise, the belt proved most comfortable. It holds the body firmly in place with the proper posture. Some sway is eliminated and it actually takes a lot of the fatigue out of riding in an automobile for a considerable distance.

Comfort, plus safety, in our opinion, makes the use of automobile seat belts highly desirable. We believe that all cars will be so equipped within the next few years.

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It has been said that kindness is a difficult thing to give away. It usually comes back to you.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. When a ground connection is tested and found to be defective, what action is recommended for improving it by reducing the resistance?

A. We are advised by one recognized authority that the best method of improving a ground connection by reducing the resistance may not be the same in all cases. Soil conditions vary, not only in different areas, but even within one area. A successful method for improving a ground in one location may not prove desirable in an adjacent area. Various methods of ground improvement are available and when properly used will accomplish the desired result.

Deep-driven ground rods are increasing in popularity at a rapid rate as an economical method of obtaining better ground connections. These rods provide a simple method of reaching the strata of better conducting soils which often lie at a considerable depth below the surface. This method proves desirable for use in areas where it is difficult to obtain low-resistance grounds by means of single 8 or 10 foot rods, and it often proves more effective than multiple rods or soil treatment.

When two or more ground rods are properly spaced from each other, they provide parallel paths to earth. With this method, they become resistances in parallel and tend to follow the law of metallic resistances in parallel. Under this concept, two rods in multiple tend to have one-half the resistance of one rod; three rods one-third the resistance, and so on. These values are not, however, quite reached in practice because the spacing of the rods may be limited and the conducting paths of earth surrounding the rods may tend to overlap.

When deep grounding cannot be used because of rock formations, chemical treatment of the soil around driven rods will prove useful in reducing the resistance. This treatment lowers the resistivity of the soil surrounding the rods and furnishes a fairly good conducting path out to where the area of the cylinder of earth surrounding the rod is relatively large. Chemical treatment of soil is also of considerable help in reducing the variations in the resistance of a ground connection due to seasonal moisture conditions.

Soil treatment is never permanent, however, due to the fact that the chemicals are carried away by rainfall and drainage through the soil. The treatment may have to be repeated after several years, the length of time depending upon the amount of rainfall and the nature of the soil.

•

Q. We often have a need to add one or two circuits for a considerable distance on a heavily loaded pole line. Proper clearance is usually a problem and open wire is out of the question. Drop wire does not provide adequate transmission. What method would you suggest?

A. Frequently, rural distribution cable proves ideal in connection with problems of this nature.

Furthermore, when only one or two pairs are required, we suggest that you investigate the use of the recently developed insulated line wire. This is a parallel type, polyethylene-insulated, two .080-inch Copperweld conductors of 30 per cent conductivity. It has a breaking strength of 1,800 pounds and has good transmission qualities.

•

Q. What special wiring is necessary for the installation of the loud speaker type telephone?

A. This instrument is installed in the same manner as the conventional type except that the power cord must be plugged into a 110-volt ac outlet. One type has the amplifier in the base of the telephone while the others we have seen have an amplifier in a separate case that is mounted on the wall.

Two of the sets have the microphone in the base of the telephone and the loud speaker is separate. The other has the speaker in the main instrument and the microphone is separate. In every case, the components used outside of the set are merely plugged in, which makes installation most convenient.

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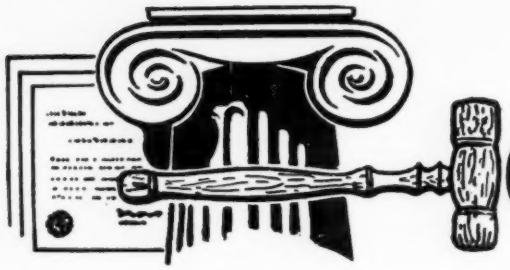


Courts and Commissions

United of the Carolinas Given Sale Authority

The United Telephone Co. of the Carolinas, Inc., Southern Pines, was authorized by the North Carolina Utilities Commission on Sept. 10 to sell its exchanges at Norwood and Marshville to the North Carolina Telephone Co., Matthews (TELEPHONY, July 21, p. 41).

At the same time, the commission authorized North Carolina Telephone to issue and sell 828,572 additional shares of common capital stock at not less than $1.20 per share.

North Carolina Telephone proposes to convert the Norwood and Marshville exchanges to dial operation late next year.

The additional stock will be sold either to stockholders or underwriters for sale to the public.

Ill. Companies Seek OKs for Stock Issues, Rates, Sales

The Illinois Commerce Commission during September is scheduled to hear the following applications:

Gridley Telephone Co., for authority to issue $13,000 of common stock, on Sept. 18.

Harrisonville Telephone Co., to issue 1,850 shares of common stock, on Sept. 18.

Prophetstown Telephone Co., to purchase certain properties of Hooppole Mutual Telephone Co., and for approval of a rate schedule, on Sept. 21.

Marion Telephone Corp. to purchase Boulder Mutual Telephone Co., Sandoval, on Sept. 21.

Minnesota Commission OKs Name Change, Rate Raise

The Minnesota Railroad & Warehouse on Sept. 10 approved changing the name of the Fillmore County Telephone Cooperative, Houston, to Ace Telephone Association. On the same date, the commission granted rate increases to the Eyota Telephone Co., effective upon conversion of its exchange to automatic operation.

The commission noted that the Eyota company had obtained a $15,000 loan from a local bank. Release of these funds was contingent upon the company's securing the increased rate schedule.

New rates are expected to raise operating revenues from $11,822 to $14,801, turn a deficit of $239 into net income of $3,469, and produce a rate of return of 5.85 per cent on the new automatic plant (total original cost: $59,320).

Old and new gross rates (25-cent discount for prompt payment) are:

	Old	*New*
One-party business	$3.50	$5.75
Two-party business	3.00	5.00
Combined business and residence	—	8.50
Rural multi-party business	2.75	4.75
One-party residence	2.75	4.25
Four-party residence	2.25	3.25
Rural multi-party residence	2.50	3.75
Mileage charge, for service beyond the local base rate area, each ¼ mile or fraction thereof for one-party service	.50 net	—
Mileage charge for service beyond the local base rate area, each ⅛ mile or fraction thereof:		
One-party	—	.30 net
Two-party, each subscriber	—	.20 net
Four-party, each subscriber	—	.15 net

The Eyota exchange serves approximately 147 local, 102 rural and 19 switching stations.

Three Indiana Independents Make Plans for Merger

Steps were initiated before the Indiana Public Service Commission on Sept. 4 toward merger of the General Telephone Co. of Indiana with the Home Telephone & Telegraph Co., Fort Wayne, and the Citizens Independent Telephone Co., Terre Haute.

A petition for stock transfers which will produce a combined system valued at $64,332,000 was filed with the commission by counsel for General, with headquarters at Lafayette.

L. H. Meyer, president of general, earlier announced plans for transfer of the combined company's general offices to Fort Wayne in the next few months.

The plan calls for stockholders of the Home and Citizens companies to receive $4,750,000 in General shares in return for surrendering their holdings in the Home and Citizens.

Two Missouri Companies Sue Over Erroneous Listing

Two Sedalia, Mo. business firms sued the Southwestern Bell Telephone Co. on Sept. 11 for $70,000 over an erroneous listing in the Sedalia telephone directory.

The Dixie Kitchen Food Products Co. and the Dixie Cream Do-Nut Shop said the directory omitted the word "cream" in the doughnut shop's name.

They each asked $25,000 actual and $10,000 punitive damages, alleging the listing has caused the wrong business to get orders for doughnuts and pastries.

N. C. Independent Gains Approval for Rate Raise

The North Carolina Utilites Commission on Aug. 26 authorized Pinebluff Telephone Co. to borrow $132,000 from the Rural Electrification Authority and to raise its rates.

Pinebluff plans to build a new telephone system and to improve and extend service to various communities in Moore, Hoke, Richmond and Scotland Counties.

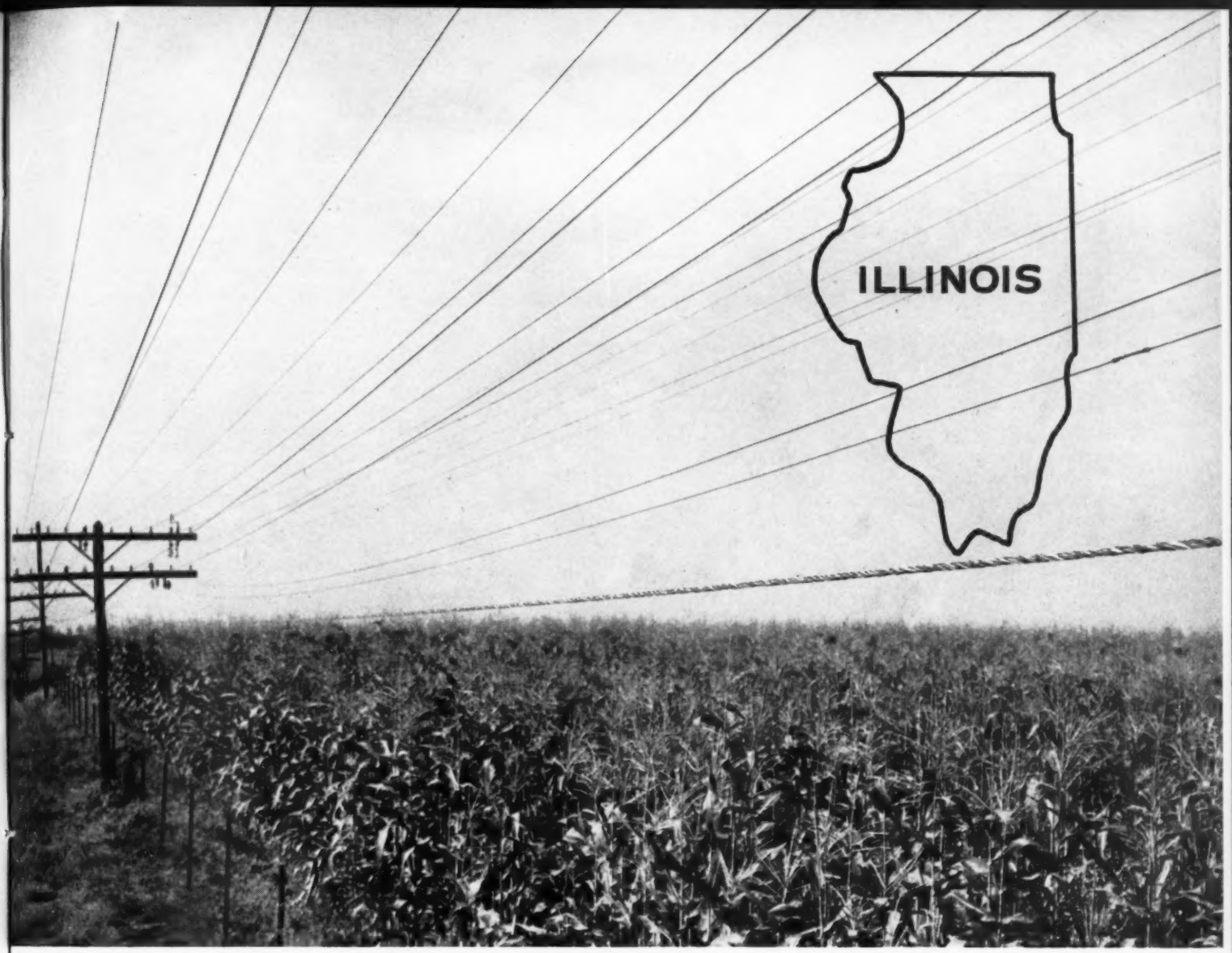
The company said the rate increase was needed to provide a return adequate to meet the loan requirements.

The new business rates will be $7.50 for one-party service and $6.00 for multi-party service. The present business rates are $2.75 and $2.50. Residence rates will be $5.00 for one-party, $4.25 for two-party, $3.75 for four-party and $4.00 for multi-party service. The present residence rates are $2.75 for one-party and $2.50 for multi-party service.

Sell N. Y. Bell Exchange To Independent

The New York Public Service Commission on Sept. 13 authorized Highland Telephone Co. to purchase the Goshen exchange of New York Telephone Co.

Acting on the joint petitions of the



400-foot spans

Made possible with polyeythlene-covered cable

Excellent results are reported with 400-ft spans for polyethylene-covered telephone cable in this section of the Midwest. Cables of older construction have usually required 240 ft. spans.

Cable with polyethylene insulation and vinyl plastic jacketing has now been in service in this area since 1953. The extremely light weight of polyethylene has brought several related economies, including a five-foot reduction in pole height, elimination of guy wires and messengers, faster handling of cable, and less land clearing. In winter, the high strength-weight ratio of the cable construction has cut damage from ice and sleet loading.

These improvements are typical of the favorable experience reported by users of wire and cable covered with BAKELITE Brand Polyethylene and Vinyl Plastics. The outstanding dependability of these materials has been confirmed by extensive use on signal control cables, utility line wire and service drop, power cable, and coaxial cable. These materials meet REA requirements for plastic-covered telephone wire. Also, IMSA specifications for fire alarm and signal control cable; ASA standards for weatherproof wire; and ASTM D1238-52T Type II, dielectric materials.

Much of this information, of direct interest to the telephone industry, is reported regularly in Bakelite Company technical publications. They are available without cost, cover both polyethylene and vinyl for wire covering. Keep up-to-date on recent developments, write Dept. RN-180.

BAKELITE BRAND PLASTICS

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

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two companies for authority to complete the transaction, the commission said:

"The transfer appears to be in the public interest and should be approved. The condition of the records of the New York Telephone Co. makes it impossible to determine with exactness the original cost and existing depreciation in the property to be transferred. The proposed purchase price, however, is within the realm of reason and was reached at arms-length bargaining in an effort to transfer the property at original cost less accrued depreciation."

The Goshen exchange serves slightly more than 2,100 telephones through a manual switchboard. Highland Telephone plans to continue operation of the Goshen exchange, using existing facilities and personnel until March 1958, when conversion to automatic operation is contemplated. It also plans to include its Chester exchange in the Goshen local calling area after conversion.

Highland Telephone now serves about 7,300 stations in 20 Orange County communities through exchanges in Monroe, Highland Mills, Chester, Washingtonville and Maybrook.

Request OK to Transfer Two Indiana Exchanges

Indiana Public Service Commission on Aug. 31 was reported to have received the petition of Cynthiana Telephone Co. to sell its properties to the Kirksville Telephone Co., Princeton. The Kirksville company also sought approval of a $100,000 common stock issue ($20 par).

It was reported on Aug. 29 that Pendleton Telephone Co. had asked authority to merge with General Telephone Co. of Indiana. General plans to convert the exchange to automatic and requested permission to charge rates comparable to other General system rates.

N. C. Independent to Buy Lines from Southern Bell

The Western Carolina Telephone Co. was authorized by the North Carolina Utilities Commission on Sept. 13 to purchase Southern Bell Telephone & Telegraph Co. toll lines in Macon and Jackson counties west of the Haywood-Jackson line.

The commission said Western Carolina plans to convert its exchange at Franklin to automatic and that this will make Southern Bell toll lines between Franklin and Clayton, Ga., of more use to Western Carolina than to Southern Bell.

Extended Area Service OKd For N. C. Company, SB T&T

Union Telephone Co. was authorized by the North Carolina Utilities Commission on Sept. 13 to provide toll-free, extended area service between its exchange at Gibsonville and Southern Bell Telephone & Telegraph Co. exchanges at Burlington, Elon and Kimesville, and to increase its exchange rates to offset the cost and the loss of toll revenue. Following are the old and new rates at Gibsonville:

	Old	*New*
One-party business	$5.00	$9.75
Two-party business	4.00	7.50
Four-party business	3.50	5.75
Rural multi-party business	3.25	4.50
One-party residence	3.00	4.50
Two-party residence	2.50	3.50
Four-party residence	2.00	2.90
Rural multi-party residence	2.00	2.90

Oklahoma Independent Seeks Increase in Rates

Approval of a raise in telephone rates at Big Cabin is being sought from the Oklahoma Corporation Commission by the Big Cabin Telephone Co.

The company said it wants to rebuild its plant and convert to dial operation.

The application was filed by J. Curtis Shrum. The proposed new rate schedule would raise the cost of one-party business service from $4.50 to $7.00; one-party residence service from $3.00 to $5.50, and rural residence service from $3.50 to $3.75.

Tidewater of Virginia Offers Stock, Bonds

Tidewater Telephone Co., Warsaw, Va., on Sept. 12 offered its preferred and common stockholders 14,738 shares of additional common stock at the subscription price of $23.50 a share. Par value is $20 a share.

The offer, to stockholders of record as of Sept. 10 who are Virginia residents, will expire at 3 p.m. October 1. The stock will be offered to the public at $24.50 a share, subject to rights of stockholders.

Galleher & Co. of Richmond heads the group of underwriters, which also includes Branch, Cabell & Co. and Miller & Patterson both of Richmond, and R. M. Armistead & Co. of Staunton.

Proceeds from the stock offering and sale of $250,000 principal amount of convertible debentures maturing Aug. 31, 1976, will be applied to reduction of the company's short-term bank loans incurred to make capital improvements.

Nev. Company Asks Raise

Chairman Robert A. Allen of the Nevada Public Service Commission announced recently that the Northern Nevada Telephone & Telegraph Co., Tuscarora, had applied for a rate increase on all lines with the exception of that serving the Trail Creek-Mountain City area in northern Elko County.

Mo. Independent Asks To Raise Rate Schedule

Twin Lakes Telephone Co. presented evidence to support its application for a rate increase at a hearing before the Missouri Public Service Commission on Sept. 4.

The company has recently converted to automatic and seeks an increase of $25,604.88 which would result in a 6 per cent return on the new investment figure.

Malcolm Sherwood, president and operating manager of the company, told the commission that the company has borrowed a total of $305,000 from the Stromberg-Carlson Co. to finance the modernization.

Of that amount, he said $205,000 is in long-term financing, which has been approved by the commission, with the remainder in interim "demand" notes which have not been approved by the commission.

He said the company soon will seek commission approval of a permament plan of financing for the $100,000 loan.

Illinois Independent Asks To Issue $57,000 in Notes

The Chandlerville Telephone Co. on Sept. 11 petitioned the Illinois Commerce Commission for an order authorizing the issue of $57,000 in notes to finance an improvement program.

The notes would be secured by a mortgage on all the company's property.

The company plans to install an automatic system at Chandlerville. The $57,000 would cover the cost of new equipment plus installation.

General of California Bond Issue To Halsey, Stuart

General Telephone Co. of California, Santa Monica, on Sept. 11 awarded its 20-million-dollar issue of first mortgage bonds, series J, due Sept. 1, 1986 to Halsey, Stuart & Co., Inc., representing a group. The securities were awarded at a price of 100.35 for a 4½ per cent coupon, or on approximately a 4.48 per cent cost-of-money basis.

Halsey, Stuart is placing the bonds on the market for general distribution at 101.50 to yield approximately 4.41 per cent to maturity on Sept. 1, 1986.

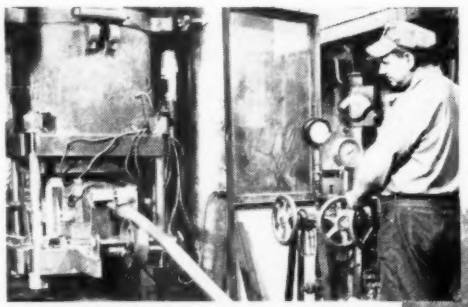
Competing bids for the bonds, with a 4½ per cent coupon, were submitted

(Please turn to page 47)

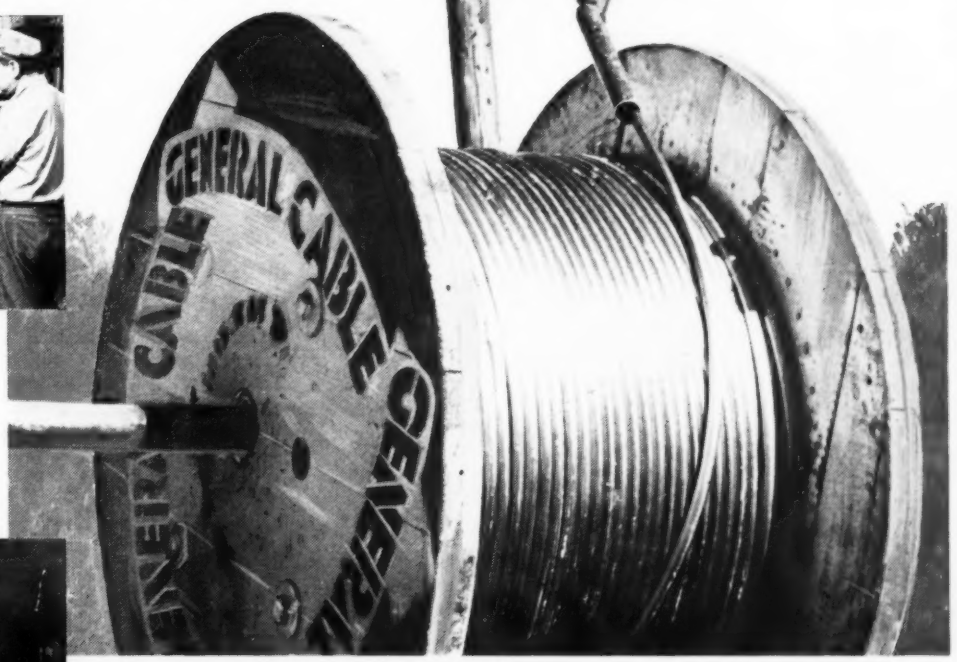
GENERAL CABLE

quality and
long service

PAPER LEAD
TELEPHONE CABLE



Lead Press Extrudes a Lead Sheath
Over the Insulated Cable Core.



Telephone Cable Testing

RIGID MANUFACTURING CONTROLS and use of highly ductile, extra strong 1% lead antimony sheath ensure unequalled long life and reliability. Uniform mutual capacitance, staggered pair lays and quad lays give maximum transmission efficiency, minimize crosstalk. Available for aerial and duct services and armored for underground and submarine use.

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for quality and service . . . **specify GENERAL CABLE**

"Yes, Sir! . . .
STROWGER
AUTOMATIC
. . . new lines of
Strowger equipment installed
last year exceeded all others
—many times over!

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. It's TODAY'S BEST SELLER!"

That little "bookworm" has the facts, all right. Independents are buying more Strowger Automatic than any other dial switching equipment! Here's why:

Strowger meets today's needs best. High-grade local service, nationwide toll dialing, automatic toll ticketing—you name it—Strowger is providing it in the most economical manner. Its principle is so simple, its circuits so direct that you can adapt to new needs easily and surely.

Strowger guarantees economical low maintenance—one of today's greatest needs—and unparalleled long life as well. Strowger is quality-built by the company with the longest experience in manufacturing dial switching equipment.

WE'RE AT YOUR SERVICE!

Call in our friendly engineers today. They'll be glad to come—and *you'll* be glad when you see how much their help can mean to you. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC®

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GENERAL TELEPHONE SYSTEM

INDEPENDENT

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may we help you sell *an* electronic secretary?®

use this ad with our compliments: ——

Show the Electronic Secretary ad on the right-hand page to your business subscribers who need a telephone answering service. Give a copy to each of your commercial representatives and display it in your window or by your cashier's cage. (We'll gladly send you all the copies you need.) In no time at all you'll find a lot of live-wire prospects!

That's not surprising, either. Not when you consider that banks, theaters, churches, contractors, refrigeration companies, stoker- and oil burner-service companies – plus a host of one man offices such as doctors, dentists, realtors, and insurance agents – are all prospects for the Electronic Secretary.

If you really want to promote the Electronic Secretary full-blast, we'll be glad to help you. We'll send you a brochure to show prospects, and a number of envelope stuffers with your imprint too, if you wish. Write us today; tell us how many brochures and stuffers you want. Put this material to work – and *then* watch the orders roll in!

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1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300

AUTOMATIC ELECTRIC®

ORIGINATORS OF THE DIAL TELEPHONE

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let "elsie" answer your telephone!

Going out to lunch?...leaving on an important call?...no one to stay at your place of business? *Relax!* Merely switch on "Elsie" the *Electronic Secretary*, and all calls will be answered courteously, automatically. A short recording requests each caller to leave his name, number, and message. You can get the messages by telephone if you wish. *There's no need to return to your office!*

You'll enjoy the prestige and the freedom the Electronic Secretary brings to your business. It's economical too—handles your calls 24 hours a day for a few pennies. Call your telephone company today for full details.

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

RENDERING INFORMATION service is an important function in many establishments, as well as in the telephone industry. We find information desks in banks, retail establishments, railroad depots, hotels, and many other places.

In a telephone exchange, information service, to an extraordinarily high degree, depends on the exercise of good judgment, thoughtfulness, and initiative by the operators. It is less subject to precise rules than is almost any other type of telephone service. Each call is different, and there are infinite variations in names, pronunciations and spellings, as well as in the manner in which requests are made and the way in which telephones are listed.

Instructions in the handling of information calls must be considered more as a guide to correct procedure, and less as a statement of definite rules, than in most other forms of operating practice. The quality of the information service depends, therefore, as much on the development of the operator's judgment as on her training in the operating practice.

All operators should appreciate that the objective of information service is to find the desired listing. Information practices are designed to aid the operator to accomplish this most easily and efficiently, but are in no way a substitute for the good judgment and sound knowledge of an experienced information operator.

It is fair to assume that in most instances when a customer requests a listing, there is such a telephone. If the listing is not found, there is good possibility that this is due to limitations of the operating practice or its application, or to the fact that the calling party lacks sufficient knowledge of how the telephone would be listed, rather than because there is no telephone for the desired party.

The rules governing limitation of search in the operating practice are based on experience as to how much search, in the average situation, is likely to be productive, and beyond which it is unprofitable to go. They are intended to avoid useless search which does not accomplish anything, rather than to set arbitrary limits on the amount of effort worth while to find a listing.

Therefore, the limits do not apply to requests on which definite or complete details are given, or on which the customer can give additional details which permit the search to continue profitably. Information operators should feel free to extend the search beyond the specified limits whenever in their judgment a continuation of the search has good prospects of success.

On the other hand, search should be discontinued promptly at any time when it becomes evident that further effort is unlikely to be effective. The test of judgment is the result; if the listing is found, the additional search was worth while; if it is not found, the search evidently was wasted.

Economy of operation and fast speed of service are essential, but are best accomplished by efficient operation rather than by rendering a more limited service. This involves well-trained operators, good switchboard arrangements, good records, effective use of frequently called number lists, and high development of memory calls. If fast service is given on the great bulk of calls which do not present difficulty, a longer search on the occasional difficult call is not of serious consequence.

More important than limiting the search in obtaining fast speed of service is development of good search techniques, that is, choosing the right record; knowing where to look; knowing when to stop looking; making use of personal knowledge; being free to suggest possible listings; developing ability to scan, and skill in pronunciation and spelling.

Having completed the search without finding the desired telephone, it is futile to re-search the same records, therefore, the report should be given promptly and confidently. There need be no hesitancy in giving an NF (no telephone) report if such is the case after having made a competent and adequate search.

Information operators in the course of time acquire a large store of telephone numbers which they personally know, which are not on the frequently called number list, and in addition, they can remember a high proportion of the numbers on the list. The more numbers operators can quote from memory, the nearer the information service approaches the objective of giving the customers the numbers they desire in the shortest possible time.

More on the subject of information service will be published in the next issue of "The Operator's Corner."

Traffic Questions

(1) At the end of approximately three minutes, if an information operator has not been able to give an acceptable report and her search is to continue, what should she say to the calling party?

(2) How should the information operator proceed in giving reports to other operators?

(3) If a customer asks the information operator to make a choice or recommendation as regards a telephone number, as for example:

a. The customer asks her to recommend a business concern in preference to another business concern.
b. The customer asks the information operator to make a choice in giving him a telephone number where there is more than one listing which may be the one he desires or may serve his purpose.

Should this information be given to the calling party?

(4) What action should be taken by the information operator after giving a report?

(5) When an information operator refers a customer to her supervisor because she is unable to make the report understood, how should the supervisor proceed?

Answers are presented on page 54.

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a major advance in pressure-treated pole production

by OLIN MATHIESON

Keyed to the soaring growth of America's public utilities, Olin Mathieson has now expanded its FROST pressure-treated pole operation to major proportions by the purchase of additional plant facilities.

The FROST operation of Olin Mathieson is managed as a modern, fully-integrated program — from vast forest reserves to pressure-treating facilities. Olin Mathieson's inflexibly high standards assure unexcelled quality in product and service.

Planning-in-depth, constant-cycle harvesting and high operating efficiency enable FROST to offer a complete selection of pressure-treated poles for prompt shipment to any destination. FROST efficiency stands ready to eliminate your planning and inventory problems.

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SHREVEPORT, LOUISIANA

Section 22

Meeting the PBX Customer

The Service Adviser should give close attention and plan carefully when scheduling her visits to her PBX people. Her objective should be governed entirely by her customer's needs. Most difficulties will be avoided and the attendant's and the PBX management interest will be stimulated in their over-all service if the Service Adviser has a well thought out scheme for service improvement.

The record of visits kept by the Service Adviser, showing service irregularities found at the boards she supervises, when combined with instructional service reviews, should prove useful information for working out a visit plan.

The Service Adviser should work diligently toward full cooperation from those with whom she deals. It takes considerable ingenuity and tact to develop a sound customer service perspective, especially since she must, at all times, avoid involving herself, or her company, in matters which are definitely of neither's concern.

The customer's active interest and support must be encouraged, if he is to make the most out of the facilities he has and eliminate conditions which could bring about criticism of his service.

The Service Adviser should be thoroughly familiar with all the services offered by her company and be alert to let the customer know of these services and how they can reach her when her help is needed.

The Service Adviser is one of the most important mediums by which the PBX customer can get the attention and consideration he needs and demands. She is looked upon by her PBX constituents as the telephone company and the results of her activities are reflected very definitely in the over-all service of the central office.

When visiting a PBX, the Service Adviser is concerned with three groups of contacts, all of which are of vast importance in reaching the goal she has set for herself—fast and pleasant telephone service to all.

Management contacts should be considered as such, only when the person who has full charge of the PBX switchboard, equipment, personnel and service has been personally contacted by the Service Adviser with the specific intention of establishing or improving customer relations.

Attendant contacts will be far more fruitful if made in the spirit of friendliness. The Service Adviser will find cooperation will come quickly and easily when she works through suggestions rather than through criticism. When she has gained the attendant's confidence she must merit it through helpful advice and assistance. Once she has established such friendly relations, she will find that she is a welcome visitor and her suggestions will generally be followed.

The extension user's habits will greatly influence the over-all service at the PBX and contribute considerably to the cost of service to his firm. The promptness with which he accepts a call and then relinquishes the connection influences the work of the attendant and the need for equipment additions. Once you have gained the management's support and supervision of extension users performance, the greater will be your progress in any improvement program.

The Service Adviser can go far toward eliminating faulty telephone usage and gain the respect and friendship of those she contacts if she follows simple procedures and conducts herself in a business-like fashion.

She should look her best at all times. Neatness and cleanliness of apparel and person pleases everyone. She should dress attractively but with an eye for simpleness of costume and quietness of color. A business-like appearance reflects an ability to accomplish. It brings about confidence from others and satisfaction to oneself.

The Service Adviser has the opportunity to make the customer and PBX attendants happy that it is she who will work with them on telephone problems. To maintain such a status, she must not fall into the habit of giving orders instead of making requests. She must be friendly and helpful.

The Service Adviser should be governed by the personality of the person she approaches. If she doesn't know the person, she should present herself in her most pleasing manner. She must be a good listener and show a genuine interest in what the other person is talking about. Her PBX people should be encouraged to speak freely. She should make them feel she is glad to serve them. She should remember that the first impressions are often lasting ones.

Words are the tools by which one conveys an idea or a thought to another. An inner feeling sometimes puts a different emphasis on a word and it comes out with a meaning not intended. Each attendant's voice is individual and it should remain so. The prime requisites of any group of words are naturalness and sincerity and they should be appropriate to the occasion.

Once you show a genuine desire to be considerate and helpful, you will find your PBX people willing to heed your suggestions as to how to solve their telephone problems. Your voice is the most direct expression of your inner self. Be careful, through it, to do yourself full justice.

In order for your visit to a PBX to be of value to the customer and a satisfaction to yourself, you should have some items of service to check. Below are listed a few conditions which, if neglected, might develop into service deterioration:

(1) *Night Service.*

Emergency calls.

Method of putting up and taking down night connections.

Night service cords (patch cords). Are they in good condition; are plugs polished?

Are central office trunks overloaded by too many patched extensions?

(2) *Proper Use of Trunks.*

Incoming.
Outgoing.
Method of placing long distance calls.
Are trunks in proper sequence?

(3) *Training Needs.*

Regular attendant.
Relief attendant.
Training—school or on premises?

(4) *Operation of Special Equipment.*

Tie Lines.
Conference circuit.
Code calling or page system.
Extension wiring plans.

(5) *Service Needs.*

Is type of headset correct?

Do attendant's other duties influence the service she gives over her board?

Does the PBX need a service review?

(Section 22 to be continued next week)

Reports School Experiment In Stock Ownership

An interesting experiment aimed at enhancing the future of private financing recently was reported in the *Industrial News Review.*

Said the *Review:* "More and more people—particularly in the moderate-income brackets—are buying shares of stock in corporations in whose future they have faith. There is every indication that this number will steadily increase as time goes on. How can young people — the potential shareowners of the future—learn in a practical and interesting way just how the stock market operates and what it contributes to the American free enterprise system?

"A group of students in an eastern high school came up with an excellent answer to that question. Under the direction of their economics teacher, they gathered a wealth of information about the market, including its mechanics and terminology. Each student nominated a specific stock and argued its merits. A share of the stock receiving the largest number of votes was actually purchased.

"Then the group of shareowner-students kept a daily graph, showing their stock's ups and down and other factual data. They discussed and analyzed the various factors that might affect its value. Interest was strong, with teachers and members of other classes joining in.

Earle D. Pitt of Atlanta, Ga., executive of the Western Union Telegraph Co., Inc., being sworn in as director of the communications division, Business & Defense Services Administration, U. S. Department of Commerce. Administering the oath of office is BDSA Administrator Charles F. Honeywell.

"A trade organ, *Wholesale Grocers News*, accurately emphasized the significance of this when it said: 'Here is another example of the wonderful magic of learning by doing. . . . These students acquired some appreciation of what makes the American economy tick . . . some appreciation of business risks, of capital requirements, of investment returns.' This school's experiment should be widely emulated," concluded the *Review.*

Left Photo: Present for the cut-over of the BEK Telephone Mutual Aid Corp.'s exchange at Tappen, N. D., were (left to right, front row) Vernon Smith, Lawrence Hayden, Elvin Kinonen, and Ervin Stern. Standing are: Mrs. Gerber, Mrs. Johnson, Miss Sailor, George Kraemer, plant superintendent; Orvin Scott, office manager; and William Van Fleet, manager. A total of $1,870,000 has been borrowed by the BEK company from REA. The Tappen conversion is the third of nine planned by the company. Right Photo: View of the two-day switchboard maintenance school held recently in the BEK company's office at Steele, N. D., and conducted by Mr. Radin of Washington, D. C. Those in attendance were Roy Swanson of REA; Robert Van Cleve, Earl Foreman and F. W. Ahlgren of Reservation Mutual Aid Telephone Co.; Lester L. Miller and James Wilhelm of West River Telephone Mutual Aid Co.; James LaMont and Lavone E. Vandal of Polar Telephone Mutual Aid Co.; Donald W. Walters of Souris River Telephone Mutual Aid Co. and Messrs. Kraemer, Kinonen, Smith, Van Fleet and Hayden, and Bill Frank, all of the BEK company.

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construction and maintenance DIGEST

- **Block that bolt**
- **Direct burial saves costs**
- **Insure your power**
- **Cut guying costs**
- **Self-supporting**

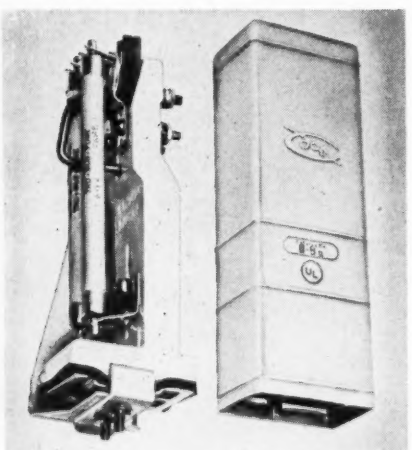
Published every week to help you get the most out of your materials and supplies dollar

by C. J. Reynolds, Stromberg-Carlson Company

Two dividends are yours when you order supplies from Stromberg-Carlson. First, you get the protection of a double guarantee—ours and the maker's. This assures you of getting the finest products, backed by our 62-year reputation. Second, your support is used to further the art of telephony. We're knee-deep in this industry as a full-time job, not a side line, and your supply business plays a big part and helps us continue our research for new and better telephone equipment.

Protect telephones from lightning

No larger than a good-size candy bar is the Cook 09u telephone protector shown here. But it can save you a lot of grief and you can protect single circuits, both indoor and out.



Individual circuits are protected by small unit, measuring 6"x2½"x1¾".

The body is a single piece of heavy white glazed porcelain. Lightning arrestors are two Tru-Gap dischargers, two flat carbons mounted on a copper ground, and two A-9u 7-amp. lavite fuses. Neoprene gasket locks out insects, dust, snow, etc.

Direct burial cables save cost of underground ducts

Ansonia manufactures cables for direct, ductless burial, thoroughly armored to provide the mechanical protection you need for dependable telephone service.

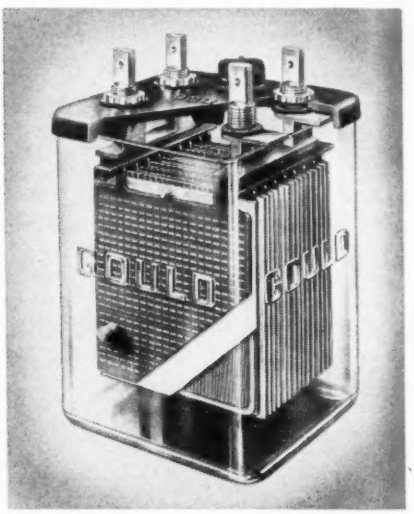
Ankoseal Type 775-AP Direct Burial Cables offer you the added protection of two .013" aluminum alloy flat armor tapes, plus an overall jacket of Ankoseal plasticized PVC over the standard Type 775-P Cable. The armor tapes give additional shielding.

Layers of protection make Ankoseal Direct Burial Cable ideal for low-cost underground placement of outside cable plant.

With its flexibility and light weight, Ankoseal Direct Burial Cable permits quick placement in trenches or by means of cable plows with small crews.

Insure your power supply

Because Planté batteries practically last forever...providing stand-by power that never fails...they're the best operating insurance you can buy. In switchgear, signal and alarm systems, or emergency light and power applications, these lead batteries have rolled up amazing performance records . . . are famous for their ability to deliver a powerful surge or a steady flow of current the instant it's needed. Make sure you're in operation . . . always. Choose Gould Planté.



A sure, dependable supply of power when you need it. That, briefly, is the story of this Gould Planté battery.

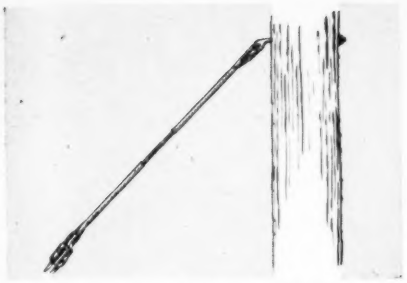
Cut labor costs 50%, save 86c on each guy

How would you like to save as much as 50% of labor costs on guying? **And** save up to 86c on each guy strand, as well?

Preformed "Guy-Grips" eliminate the need for clamps, clips or loops, because each "Guy-Grip" provides its own loop-eye. This reduces the amount of strand you need. Total savings on a typical guy can go as high as 86 cents!

To install, almost all work is done on the ground — mostly by hand, using no special tools. You can often cut installing time in half!

XUM



You hold the full strength of the strand with this Preformed "Guy-Grip."

Lab and field tests show that "Guy-Grips" will not allow the strand to slip, and are so strong that they can hold the full rated strength of even Extra-High-Strength Steel Strand.

Distribution wire needs no cross arms

There are several reasons you can enjoy lower installing costs with this Whitney Blake multi-pair distribution wire.

Because it's self-supporting, it needs no cross arms. And it's easy to string because it's lightweight and comes in long lengths—up to 4000 feet per reel.

Self-supporting distribution wire has built-in messenger.

This wire has excellent electrical characteristics: low-loss transmission, low capacitance, high dielectric strength.

Its polyethylene insulation provides excellent weather resistance.

The wire is available with 6, 11 or 16 pairs of conductors. Each conductor is protected by a polyvinyl chloride covering.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3.

TROUBLE CLEARING — Why Party Lines

Concluded from page 25

a one-party station uses a whole pair is very far from the truth, as a simple "line fill study" will prove. Just count the number of four-party stations, then the number of cable pairs used to serve these stations. Now divide the number of stations by the number of pairs. We will guarantee that the quotient will not be 4. You are lucky if it is 3. In fact a 3.2 line fill is considered excellent for "terminal-per-station" service and 2.5 for a "terminal-per-line" office.

Attempts to maintain a reasonable line fill are often expensive as they involve changing the counts of terminals and branch cables. In a terminal-per-line office many number changes are also involved.

One thing that should never be done to improve the line fill is to bridge pairs in the central office or even in a cross-box. This move defeats its own purpose and the transmission loss due to bridged pairs is high.

It is, therefore, evident that the margin between the cost of a four-party station and the cost of a one-party station is much narrower than is generally supposed. Anything that will reduce the cost of outside plant or use it more economically will further reduce the cost of a one-party station and make this margin even narrower.

New materials and new methods of construction which reduce the cost of outside plant in place are continually being developed. Several inventions are in the laboratory stage, or even undergoing field trial, which will give us multiple use of a cable pair.

We will mention one that is in sight. A fully transistorized carrier which will require no more power than can be transmitted over a cable pair, and which will transmit all signals at carrier frequency so that it will not require relays or other moving parts. Such a carrier unit would be suitable for pole mounting and would be low in first cost and in maintenance cost. A five-channel carrier would permit six individual lines (1 audio) on one cable pair, and should reduce the cost of an individual line to the present cost of a four-party line or less. There are other inventions that may be expected in the near future that will aid in this purpose.

It should also be remembered that when party lines are eliminated, the central office and traffic costs are at once reduced, also a number of somewhat intangible costs, such as the cost of handling party line complaints, are eliminated. With a reduction in the relative cost of individual lines, there will be no point to continuing the unsatisfactory party-line service.

In the meantime, many companies are doing something about this without waiting for new inventions. Several cases have recently come to our attention where companies, in cutting over from manual to automatic, and at the same time revising their rates, have deliberately dropped their four-party filing.

We have not heard of any serious public reaction to such a move.

The "two-party business" is also a class that should be discontinued at some opportune time.

We do not expect everyone to agree with our arguments, but we do hope to stir up some thought and discussion on this subject.

Book Review

"APPLIED ELECTRICAL MEASUREMENTS," by Isaac Fern Kinnard, manager of engineering of General Electric's instrument department, assisted by 14 of his co-workers. 600 pages. Price $15.

This book covers theory, measurement of electrical quantities, and measurement of non-electrical quantities by electrical means.

A two-part volume, part one covers the measurement of electrical quantities; part two treats the measurement of non-electrical quantities. Included also are chapters on the history, theory, and functional analysis of measurement, and a review of the state of applications in selected fields.

Other chapters in part one discuss current and potential difference; resistance, inductance, capacitance, and storage factor Q; power and energy; phase angle, power factor, synchronism, and frequency; waveform; magnetism; transformers for measurement; and telemetering.

Part two goes into the measurement of light, heat, sound, statics and kinetics, liquids and gases, and time.

"The book owes much of its value," writes Professor Charles L. Dawes in the foreword, "to the fact that its author and his colleagues are actively engaged in the field, and have wide experience in research and in the development, manufacture, and applications of all types of measuring devices."

"Applied Electrical Measurements" is one of a series written by General Electric authors for the advancement of engineering practice.

This book is obtainable through TELEPHONY.

OPERATION OF STATIONARY BATTERIES

Concluded from page 29

Correction of Electrolyte For Temperature

When comparing specific gravity readings, allowance must be made for variations in temperatures of the electrolyte. For each 3°F in temperature of the electrolyte above 77°F add one (.001) point in specific gravity to the actual hydrometer readings; and for each 3°F, temperature of the electrolyte below 77°F, subtract one (.001) point in specific gravity from the actual hydrometer reading. Example:

Hydrometer Reading	Cell Temperature	Correction	Reading corrected to 77°F
1.213 Sp. Gr.	68°F	—.003 points	1.210 Sp. Gr.
1.207 Sp. Gr.	86°F	+.003 points	1.210 Sp. Gr.
1.204 Sp. Gr.	95°F	+.006 points	1.210 Sp. Gr.

Sometimes it may appear that certain cells need acid rather than water as they may seem to be consistently low in gravity when fully charged. The addition of acid is rarely necessary, however, since in normal operation it is not lost from the cells. Only in case of spillage, or excessive charging which causes considerable spraying of acid, can acid be lost. It is best to call on the manufacturer's representative for advice if it is felt that an acid addition is required.

If for any reason a lead-acid battery stands idle before installation or is removed from service for any length of time it should be given an equalizing charge. This charge should be repeated monthly during the idle period. The battery should be given a thorough equalizing charge before being returned to service.

Determine Specific Gravity

The state of charge of batteries should be checked frequently. What is really being checked is the specific gravity of the electrolyte. A hydrometer should be used for the most accurate determination of specific gravity. But the correct type of hydrometer should be used—one designed and specified for telephone batteries and one calibrated for the specific gravity of the battery in use. *Do not use a hydrometer used for checking automobile batteries.*

The hydrometer should, of course, be clean. The electrolyte drawn into the barrel should be squeezed back into the cell. Wipe the hydrometer dry after use.

Many modern telephone batteries of 100-ampere-hour or lower capacity are equipped with integral charge indicators which give a visual indication of the approximate state of charge.

The charge indicators are round colored balls about ¼ inch in diameter which have a precise specific gravity which does not vary with age. The change in specific gravity with the change in temperature is the same for the indicators as it is for the electrolyte.

Usually three indicators of different colors are held in a cage which is part of the battery. They are free to rise or fall from the top to the bottom of the cage. Their position is controlled by the specific gravity of the electrolyte.

When the specific gravity is greater than an indicator, it will rise or float at the top of the cage. When the specific gravity is less, the indicator will fall. In cells equipped with three indicators, the first one is calibrated to drop at about 6 per cent of discharge, the second at about 33 per cent of discharge and the third at 66 per cent.

If all indicators are floating, the cell is fully charged. If all indicators are down, the battery needs charging.

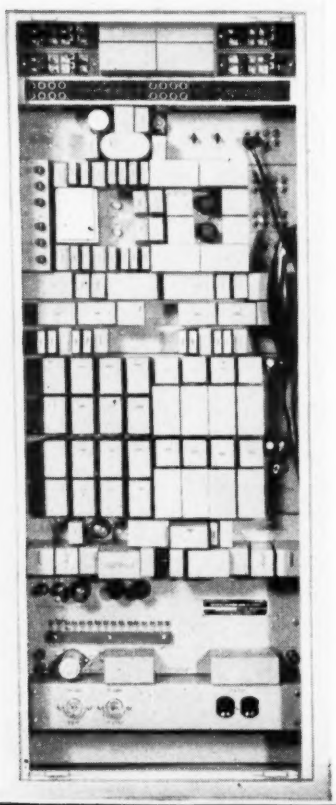
CEMF Cells

CEMF cells are used in many systems to give a fairly uniform voltage drop when current in passing through them no matter what the amount of the current is. They are used in telephone power systems to help maintain the voltage within narrow limits whether the battery is on charge, float or discharge.

CEMF cells require a special solution of sodium hydroxide and oil. Sulphuric acid electrolyte must not be used in CEMF cells. The amount of solution and oil is given in tables supplied by the manufacturer. Sodium hydroxide is caustic and should not contact skin or clothes.

Freedom and Its Enemies

"Because you love freedom, you will be quick to recognize its enemies whenever and wherever they appear. Taxes that approach confiscatory levels are an instance. So is government competition with private enterprise. So are unnecessary and arbitrary controls by government."—K. N. MERRITT, *vice president, Railway Express Agency, Inc.*



TELEPHONE REPEATER TYPE TA-289/FCC

This is a packaged voice-frequency repeater adapted for use on almost any type of two-wire or four-wire line facility. The principal components are amplifiers, hybrid circuits and balancing networks. It also includes line protectors, monitoring telephone set, d-c telegraph composite sets, adjustable line equalizers, v-f signal converter type CV-339/FCC, and rectifier for a-c operation. It has a maximum net gain of 24 db on 2-wire circuits and of 30 db on 4-wire circuits, between nominal 600 ohm impedances.

Type TA-289/FCC Repeater, Telephone, manufactured for the U.S. Army Signal Corps. This is a recent redesign of the type OA-7/FC Repeater, Telephone, and is moisture- and fungus-proofed. It meets all applicable MIL specifications.

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MANUFACTURERS OF CARRIER-TELEGRAPH, CARRIER-TELEPHONE AND BROAD-BAND RADIO SYSTEMS

COURTS AND COMMISSIONS

Continued from page 34

by groups headed by Equitable Securities Corp., 99.10; Paine, Webber, Jackson & Curtis, and Stone & Webster Securities Corp., 100.169. A bid of 100.96 with a 4⅝ per cent coupon was submitted by a group represented by White, Weld & Co. and Kidder, Peabody & Co.

General Telephone Company of California will use the net proceeds to repay short-term bank loans and for construction and expansion purposes.

Tenn. Company Registers 285,000 Shares of Common

Inter-mountain Telephone Co., Bristol, Tenn., registered 285,000 shares of its $10 par voting common stock with the Securities & Exchange Commission, it was reported on Sept. 10.

The new shares, Inter-mountain said, will be offered for subscription by present stockholders at the ratio of two new shares for each five already held. Courts & Co. heads the list of underwriters.

The company said it will use proceeds to repay short-term bank notes which will total approximately $2,625,000 at the end of September.

New York Company Obtains Loan from Berkshire Life

Cato & Meridian Telephone Co., Cato, N. Y., has closed a $125,000 25-Year first mortgage loan with Berkshire Life Insurance Co., Pittsfield, Mass., it was reported on Sept. 14.

Proceeds of the loan are being used for funding notes payable and for capital expenditures in connection with construction.

This is Berkshire's second loan to Cato & Meridian and its 47th piece of Independent telephone company financing.

Pacific T&T Petitions for 6.75% Return in Oregon

Pacific Telephone & Telegraph Co. has applied to the Oregon Public Utilities Commissioner for rate increases that would boost revenue an estimated $2,232,000 a year, according to a Sept. 10 report.

A company spokesman said the increase would average less than 5 per cent over-all.

The proposed increase would lift the earnings to 6.75 per cent level.

Turns Down Rate Plea Of Louisiana Company

The Louisiana Public Service Commission on Aug. 22 turned down the rate application of Reserve Telephone Co. for a $9,000 increase, and added that the company had overbuilt its system.

The commission said the Reserve system was capable of serving 1,200 customers, but actually had only 750 customers.

Naylor Elected President of United Companies

Alden L. Hart, president and general manager of United Utilities, Inc., Kansas City, Mo., announced on Sept. 11, the election of J. T. Naylor as president of United Telephone companies in Missouri, Kansas and Arkansas. Mr. Naylor also will be elected vice president of other principal telephone affiliates in the United System. Mr. Naylor succeeds the late Carl Spaid, who died on Mar. 9, and will augment other administrative staffs managing United properties.

J. T. NAYLOR

Mr. Naylor has had six years of service as chief executive in Manila, P. I., for the Gary group (now a part of General Telephone Corp.) providing exchange, long distance and overseas telephone service throughout the Philippines. Since 1950 he has been engaged in the financial and physical rehabilitation and growth of properties which were almost totally destroyed in World War II. The Philippines system in most respects is currently operating at treble its prewar size and volume.

Before his engagement in the Philippines, Mr. Naylor held various executive positions in the industry on the Pacific Coast including three years as director of the telephone and telegraph division of the Oregon Public Utilities Commission. During the war he served as vice president of Associated Telephone Co., Ltd., of Santa Monica (now General Telephone Co. of California) and held varied responsibilities in administration of the then Western Group division of the General Telephone System, embracing properties now managed by General Telephone Co. of the Northwest, General Telephone Co. of the Southwest and General Telephone Co. of California.

Immediately prior to his Philippines service he engineered and supervised the installation and operation of the country's first integrated automatic toll ticketing and mechanized accounting system at Sunland, Cal., then serving in the capacity of general manager of the Sunland-Tujunga Telephone Co.

Mr. Naylor was also formerly active in United States Independent Telephone Association (USITA) and Pacific Coast association affairs, serving on toll settlements and rural service committees for several years. He represented USITA on behalf of the Western States in early negotiations and congressional committee hearings in connection with telephone loan program of the Rural Electrification Administration. He also chairmanned the Pacific Coast committees on toll and extended area settlements and rural telephone expansion.

During his tenure in the Philippines he was active in youth work (YMCA and Boy Scouts) and represented that country as a delegate to the International Chamber of Commerce 1955 World Congress in Tokyo. He also served as president of the American School of Manila and director of the Philippines International Fair of 1953. He is a member of the American Institute of Electrical Engineers, American Institute of Management and various professional organizations in the Philippines. He is an alumnus of Oregon State College (electrical engineering, 1934) and holds professional engineering registry in several states.

J. Stravers Assumes Duties As Manager of Iowa Company

Joe Stravers of Pella, Iowa, new manager of the Calhoun County Telephone Co. took over his duties on Aug. 20, it was reported.

Mr. Stravers spent three years in the Naval Air Corps, and since his discharge in 1945 has been active as maintenance head, chief installer and assistant to the manager of the Fowler Telephone Co. in Pella. He took part in the modernization of that company to dial service, and is stepping into the Calhoun County Telephone Co. now as the first stages of a similar program are taking place.

The Basis of Civilization

"Civilization is a method of living, an attitude of equal respect for all men."—JANE ADDAMS.

L. G. BECK

A. D. SCRIPTURE

D. J. TOMPERS

West Coast Company Makes Executive Changes

Two executives of the West Coast Telephone Co. have been appointed vice presidents, it was announced recently by Ray Dalton, vice president and general manager of the company.

L. Gray Beck, chief engineer, has been advanced to the position of vice president-operations. His responsibilities will cover the company's operations in Washington, Oregon, and California.

Arthur D. Scripture also was appointed vice president and will continue in the position of general commercial superintendent.

Mr. Dalton also announced that Daniel J. Tompers, equipment engineer for the company, will assume the position of chief engineer vacated by Mr. Beck.

Mr. Beck's rise to the vice presidency occurs after more than 20 years of service with the West Coast Telephone Co. From 1940 to 1945, he served in the United States Army and was discharged as a lieutenant colonel. He was employed by the company in 1934 after graduating from the University of Washington. Mr. Beck has held various positions with the company, including that of Everett district manager, assistant general manager, and chief engineer.

Mr. Scripture entered the company's service in 1947, coming from San Fernando, Cal., where he was district manager for the California Water & Telephone Co. Prior to his service with California Water & Telephone, he served in the commercial department of The Southwestern States Telephone Co. at Brownwood, Texas, from 1934 to 1940. After a brief period as assistant Everett district manager, he was transferred to Forest Grove, Ore., as district manager. He returned to Everett in 1953 as general commercial superintendent.

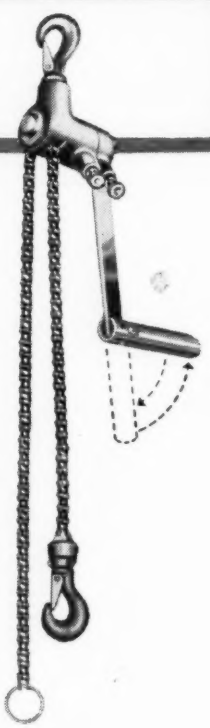
Mr. Tompers entered the service of the company in La Grande, Ore., in 1936. He has served in various capacities with the company. In 1948, he was appointed assistant equipment engineer, and in 1951, he was promoted to the position of equipment engineer.

Several additional promotions in the West Coast Telephone Co.'s general office have been announced by Mr. Dalton.

Leo McGuire will become general equipment engineer, succeeding Daniel Tompers, new chief engineer. Mr. McGuire has been with the company since 1950 and has been general traffic engineer since February 1956.

John W. Mallory, senior commercial

This Compact
Mighty Midget Puller



weighs 9½ lbs., can lift or pull 1,000 lbs.* with 40 lbs. of effort!

If severely overloaded, "safety valve handle" will bend before any other part of puller fails. All are factory tested at 50% overload.

The handle can be operated as crank for speed lifting or as lever for short pulls in cramped quarters.

Fast, safe, powerful, lightweight, compact, inexpensive—the Coffing Mighty Midget Puller enables one man to do the work of several for most lifting, pulling, stretching, tightening jobs. Ask your recognized distributor or write for bulletin ADH-40, Coffing Hoist Division, Duff-Norton Co., 808 Walter St., Danville, Illinois.

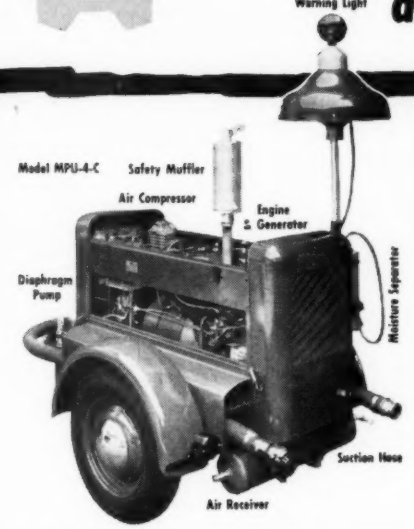
**Also available in 500 lb. capacity model weighing but 6½ lbs.*

Coffing tools are standard equipment with more than 86% of all utility companies.

COFFING HOISTS

S&G designs for you

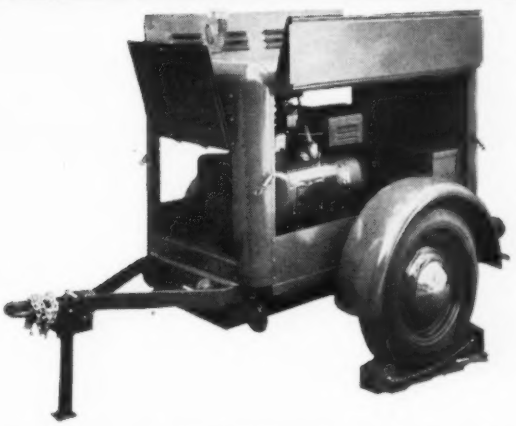
and your specific needs



MOBILE POWER UNIT (Model MPU-4-C)

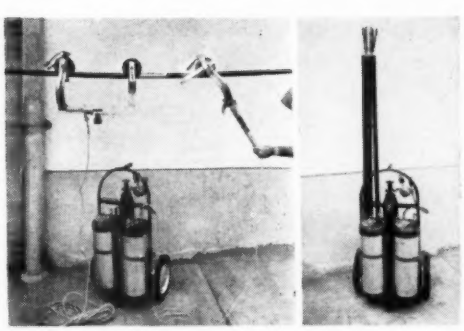
• Generator (slow speed for quietness) 2500 Watt, 110-Volt DC • Pump—2800 GPH Diaphragm to remove seepage and drain back.

• Air Compressor—to put cables under pressure for cutovers or repairs. *Furnished with or without pump and compressor.* This unit is extremely versatile and very dependable. It has a 300-Watt floodlight, push button control, buzzer signal, supplies dry air, operates electric blower, soldering pot and iron, electric and air tools—is light, easy to handle.



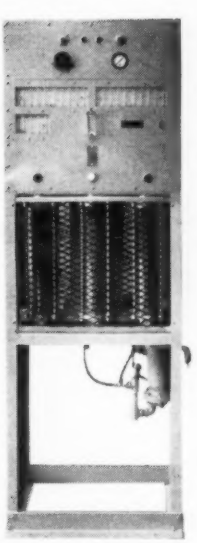
MAINTENANCE GENERATOR (Model T-300)

Used for maintenance or standby service. Equipment includes tool box, fuel tank, safety chain & chocks, tail light & reflectors and sheet metal house with hinged sides, hinged front cover. Trailer is available with or without generator. Approximate size: 92″ long, 53″ wide, 51″ high. With the generator, approximate weight is 800 pounds.



LEAK DETECTOR APPLICATOR (Model LD-1 & LD-2)

Both models use highly successful chemical type leak detector. Applicator's dual nozzle sprays both sides of pressurized cable, giving 100% coverage. Bubble cluster forms around leak within minutes and can be clearly seen from the ground. Air pressure bottle in cart supplies regulated pressure in solution tank at all times, can be adjusted for different heights.



ACD AIR COMPRESSOR DEHYDRATOR

Exchange equipment designed for supplying chemically dry air for telephone cables, aerial and underground, this unit can supply as many as 60 cables. Main feature is individual flow indicator for each cable showing volume of dry air consumed per cable per hour.

- Both Automatic and Manual Units available
- All desiccant containers are visual
- Air Purifier to eliminate oil mist
- Incorporates the latest safety devices

for further information on any or all of this equipment . . .

See this equipment at the Kellogg Switchboard & Supply Company's booth at the USITA Convention, Conrad Hilton Hotel, Chicago, October 15-16-17, 1956.

S & G MANUFACTURING CORPORATION
P. O. Box 1309 • New Orleans 10, La. • RAymond 3142

engineer, will replace Mr. McGuire as general traffic engineer. Robert Myres, equipment installation supervisor, now becomes general equipment maintenance supervisor.

These appointments, Mr. Dalton indicated, are in line with recent major changes in the company's staff personnel, designed to meet the increasing challenge of very rapid growth throughout the entire areas served by the company in Washington, Oregon and California.

Wilson and Roach Named By Illinois Consolidated

The Illinois Consolidated Telephone Co. of Mattoon, Ill., has named A. A. Wilson chief engineer, heading a new department established to meet the demands of an expansion and improvement program contemplated by the company. Mr. Wilson has been general plant manager for several years.

O. R. Roach, well-known Independent engineer, has been appointed general plant manager to succeed Mr. Wilson.

Mr. Wilson has been associated with the Illinois Consolidated company since 1930. Prior to that time he was with the Illinois Bell Telephone Co.

Mr. Roach began his telephone career with the Southwestern Bell Telephone Co. For the past several years he has been associated with the Gary Group of Telephone Companies (now a part of the General Telephone Corp.). He retired from that group recently.

Chase Bank Names H. Ekblom to Public Utilities Post

Harry E. Ekblom has been appointed an assistant treasurer in the public utilities department of The Chase Manhattan Bank in New York.

Mr. Ekblom joined the bank as a member of the training program in 1950. He has been in the public utilities department since 1953.

A native of Brooklyn, N. Y., he received his B.A. degree from Columbia in 1948 and his LL.B. from New York University Law School this year.

AWPA Issues New and Revised Standards

Three new and 15 revised standards for the "AWPA Manual of Recommended Practice" recently have been issued, according to Noel E. Kittell, president of the American Wood-Preservers' Association. Mr. Kittell is chemist and wood preservation engineer with the Joslyn Mfg. & Supply Co., Franklin Park, Ill.

The manual is a technical handbook of value to preservative manufacturers, producers and users of treated wood, inspectors, chemists, etc.

The new standards will be sent to all owners of AWPA manuals. The revisions, or partial revisions, include in some cases only editorial changes, but most of the items involve new or revised specifications approved at the 1956 annual meeting of the association.

Of particular note is the issuance for the first time of a standard covering the pressure treatment of railroad car lumber. Other changes include:

Addition of pentachlorophenol in standards for treatment of several species of pine lumber, timbers, poles and posts.

Addition of ammoniacal copper arsenite (Chemonite®), chromated zinc arsenate (Boliden Salt®), and copperized chromated zinc chloride for treatment of Pacific Coast Douglas fir lumber, timbers and posts and for western hemlock and western larch lumber and timber.

Addition of standard for full-length non-pressure treatment of western red cedar poles.

Addition of method for field tests with posts.

Old methods of sampling creosote in tank cars superseded by methods for sampling wood preservatives.

The AWPA manual is available at the association headquarters, 839 Seventeenth St., N. W., Washington 6, D. C. Price $7.50, plus postage.

PAGE

LASHING WIRE

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

3 GRADES · EACH IN 2 SIZES (.065 and .045)

Type 430 · for use with galvanized messengers
Type 302 · for use with stainless messengers
Type 316 · for use under severe corrosion conditions

Furnished six coils in cardboard carton (minimum order).

Other fine-quality products · You can depend upon PAGE Strand (Stainless or Galvanized Steel) and PAGE Stainless Dead-End Wire · See your Telephone Supply Distributor, or write our Monessen, Pa., office.

Page Steel and Wire Division
AMERICAN CHAIN & CABLE

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ACCO

Check these books on

APPLIED ELECTRICAL MEASUREMENTS

By Isaac Fern Kinnard, General Electric Company. Covers the basic principles behind commonly employed electrical measurement devices. To provide a logical arrangement for treating the variety of measurements found in today's rapidly expanding electrical industry, the book is divided according to the familiar branches of physics. Electricity, light, heat, sound, statics and kinetics, liquids and gases, and time are treated. In each, the systems of measurement are preceded by an analysis of the physical nature of the quantities measured. 1956. 600 pages. $15.00.

LINEAR TRANSIENT ANALYSIS

Volume II

By Ernst Weber. Polytechnic Institute of Brooklyn. Devoted to transient phenomena in passive and active two-terminal-pair networks, in filters, and in transmission lines. Although mathematical in nature, the treatment continually stresses the physical background and the physical interpretation of a solution. New solutions are given as well as organized presentation of topics never before explored in books. Fourier and Laplace transforms are reviewed, and a good deal of emphasis is given to lossless and distortionless transmission lines. 1956. 452 pages. $10.50

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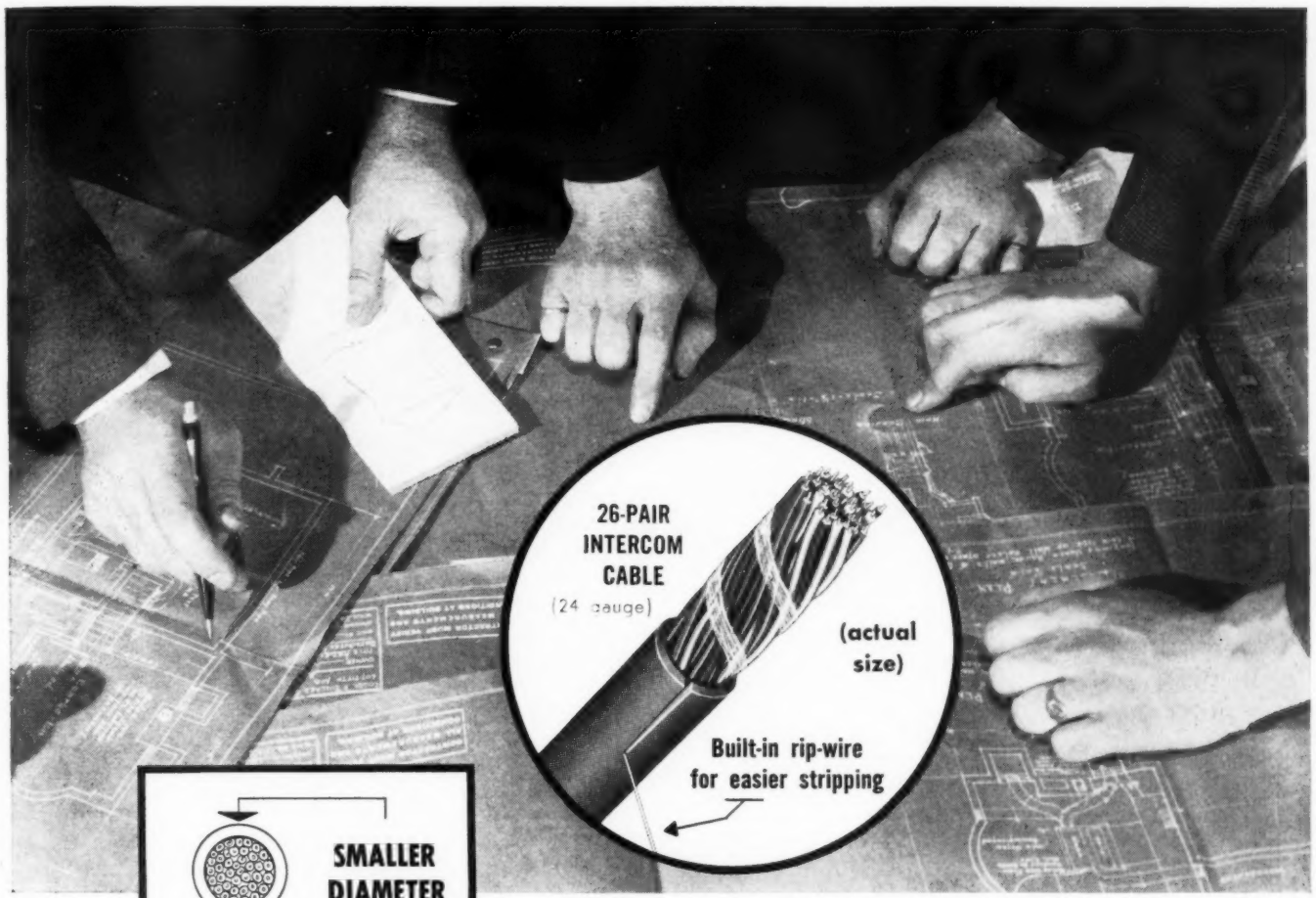
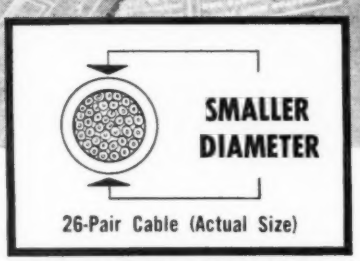
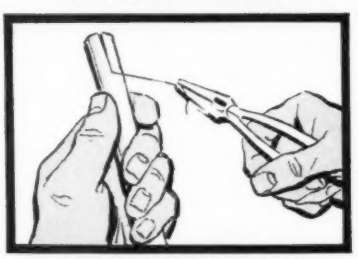
Your needs designed this **Ankoseal**® INTERCOM CABLE

SMALLER DIAMETER, LOWER COST, FASTER INSTALLATION

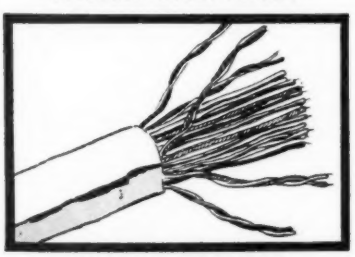




BULKINESS REDUCED!



FASTER STRIPPING!



COLOR CODING!

Ankoseal inside wiring cable has been redesigned with smaller diameters, and features that make for easier installation at lower cost. The result is an intercom cable with exceptional advantages:

1. *Substantially reduced diameters* . . 2. *Steel rip-wire built in to speed stripping* . . 3. *Full color coding to identify each pair* . . 4. *Worthwhile cost savings.*

Available with 6 to 51 pairs of solid, soft copper conductors, in 22 or 24 gauge. PVC insulation and brown jacket. (Ivory jacket also available on special order.)

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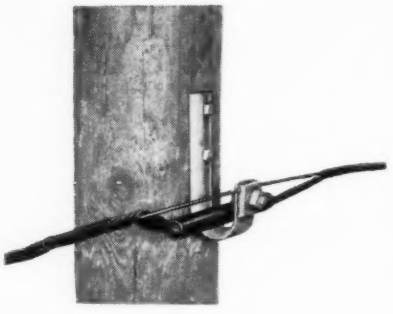
Ankoseal®

'The first all-plastic cable'

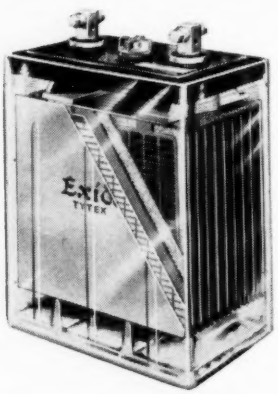
THE ANSONIA WIRE & CABLE COMPANY • 111 MARTIN ST. • ASHTON, R. I.

XUM

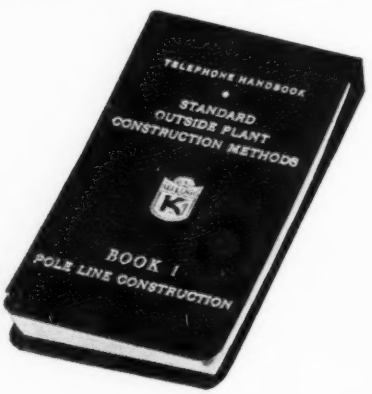
Preformed Solices for damaged line wires and messengers or new construction. Easy to install, no tools required—simply wrap the splice around messenger or conductor. PREFORMED LINE PRODUCTS COMPANY.



For Use with Self-supporting rural telephone cable. The Wire Pole Bracket is attached to pole with two $\frac{3}{8}$"x4" FD lags on straight runs and angles less than 35°. For angles of more than 35°—use $\frac{3}{8}$" carriage bolt in lower hole. JOSLYN MFG. AND SUPPLY CO.



More Power, Less Space—The Exide-Tytex battery requires only one-half to two-thirds of the space needed by the conventional cell. Permits smaller racks in new installations. Exide Industrial Division, THE ELECTRIC STORAGE BATTERY COMPANY.

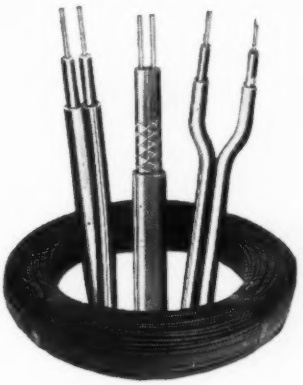


Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.

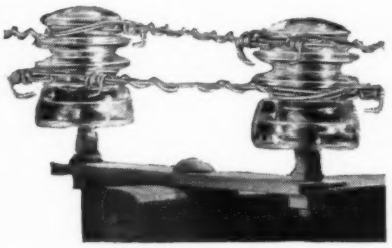
A GALLERY OF MASTERPIECES OF FINE LINE EQUIPMENT

XUM

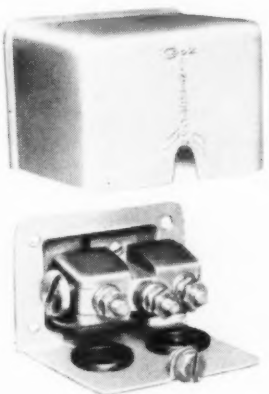
The New RectiRinger consists of a time-tested Raytheon Recti-Filter to supply humless, regulated DC power for the switchboard, and an adaptation of an exclusive saturable core reactor to supply 20-cycle ringing power. Made by RAYTHEON MFG. CO.



Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.



Double-Groove Transposition Insulator (No. 56) is employed for all circuits (exchange, toll, or trunk circuits) that employ tandem type transpositions. The test of time has proved the high quality of these Hemingray Insulators—a product of OWENS-ILLINOIS.



The New Cook Interceptor is a fuseless, carbon-to-carbon arrester which grounds power cross surges and lightning. Mini-Gap arresters are mounted in a moisture resistant and dirtproof receptacle—no grounds due to dirt or insects. COOK ELECTRIC COMPANY.

KELLOGG Branch Warehouses and Offices:

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Every item that Kellogg ships is a masterpiece in its field, selected because of its high quality. Delivery is fast, too. There are 7 Kellogg warehouses and more than 100 distribution points across the country.

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KELLOGG SWITCHBOARD AND SUPPLY COMPANY
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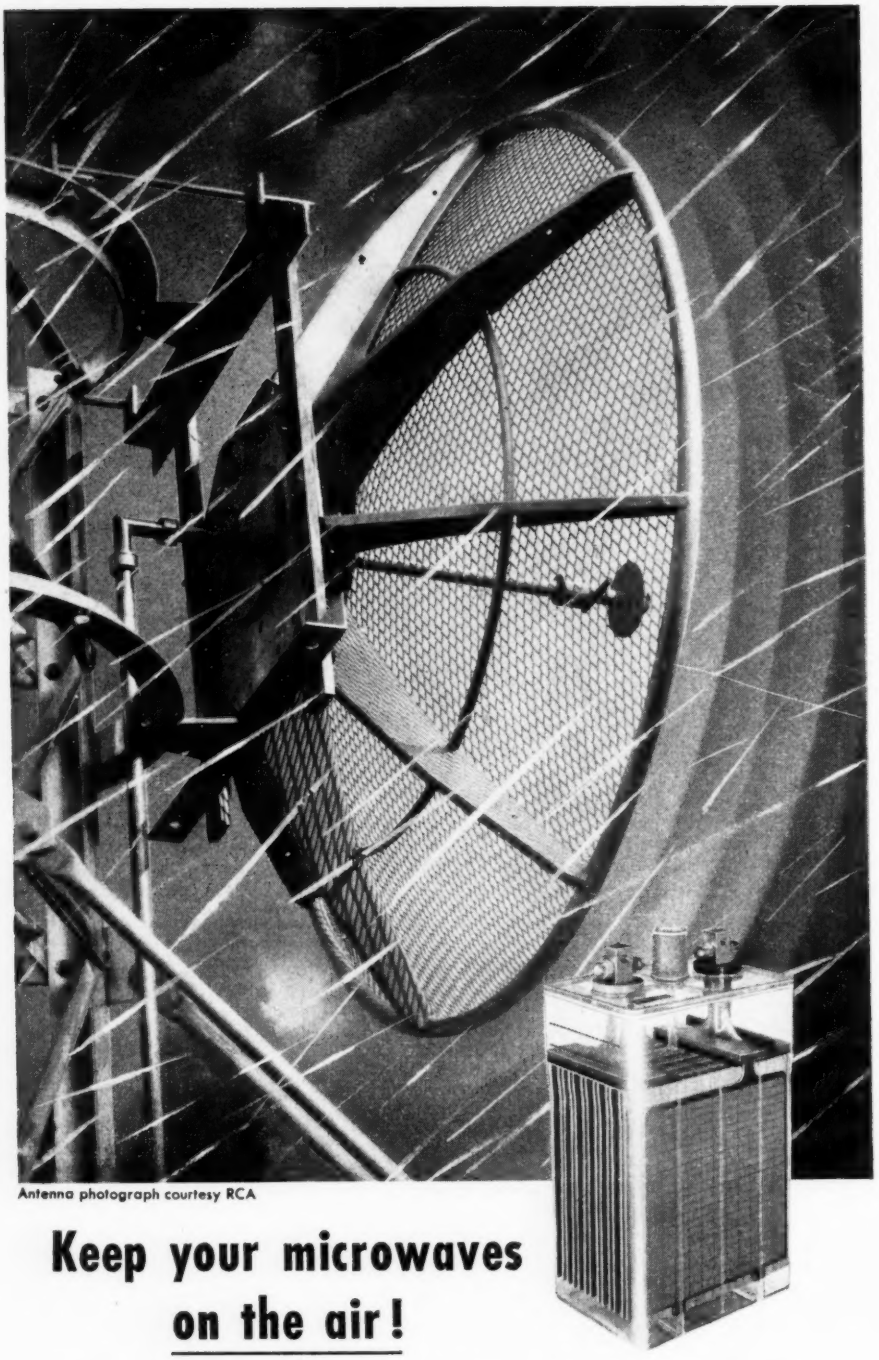
Telephone: DEarborn 2-0750



Antenna photograph courtesy RCA

Keep your microwaves on the air!

with C&D Batteries, for standby power

C & D Batteries are always ready to help keep your vital microwave system on the air, regardless of interruptions to normal power supply.

With C & D batteries standing by, you get—

1. An emergency source of power that *always* starts.
2. Low annual cost.
3. Simplest maintenance—no working parts to get out of order; just dust and occasionally add water.
4. Long life—25 years with lead-calcium C & D PlastiCal.®

For complete details on C&D standby power, write for Bulletins T-527/55 and T-528 Rev. 3.

C&D BATTERIES, INC.
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Industrial Batteries since 1906
SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

General Offers Colored Telephones in Grocery

The General Telephone System is conducting a national merchandising test to determine the effectiveness of going outside their regular channels in a sales promotion, it was announced on Sept. 9. They have chosen the General Telephone of Kentucky and Kroger's Southland store in Lexington as the scene of this test.

A full display of telephones in eight different colors was set up on Sept. 13 through 15 (a Thursday, Friday and Saturday). A General of Kentucky representative was on hand to help customers select their telephones.

These colored instruments could be taken home by the customer, for installation at a later date, or an order could be placed right there in the store for future delivery.

Realistic Appraisal

"Cease to brag to me of America, and its model institutions and constitutions. America, too, will have to strain its energies, crack its sinews, and all but break its heart, as the rest of us have had to do, in thousand-fold wrestle with the Pythons and mud-demons, before it can become a habitation for the gods."—CARLYLE.

Answers to Questions On Page 40

(1) The operator should say, "I'm sorry to keep you waiting. If you'll give me your number, I'll call you."

(2) In giving reports to other operators, the information operator should remain in on the connection until she has completed the search and given a report unless it is necessary to cut out.

(3) The operator should not give out any information to the customer, or answer any inquiries by him of this nature.

(4) The information operator should listen carefully to make sure that the report is understood. She should acknowledge any repetition of it.

(5) The supervisor should try to explain the report to the customer. If she is unable to do so, she should ask if there is some one else who can talk for him. If the transmission seems to be at fault, the supervisor should report the condition.

"Who's in charge here?"

"*About that crazy tower you're putting up in my back yard . . .*"
Oh, that? Yes. Telephone tower.

"*Telephone tower? Telephones use poles, doc.*"
Not this kind. Microwave. Shoots phone calls right through the air. No poles. No wires.

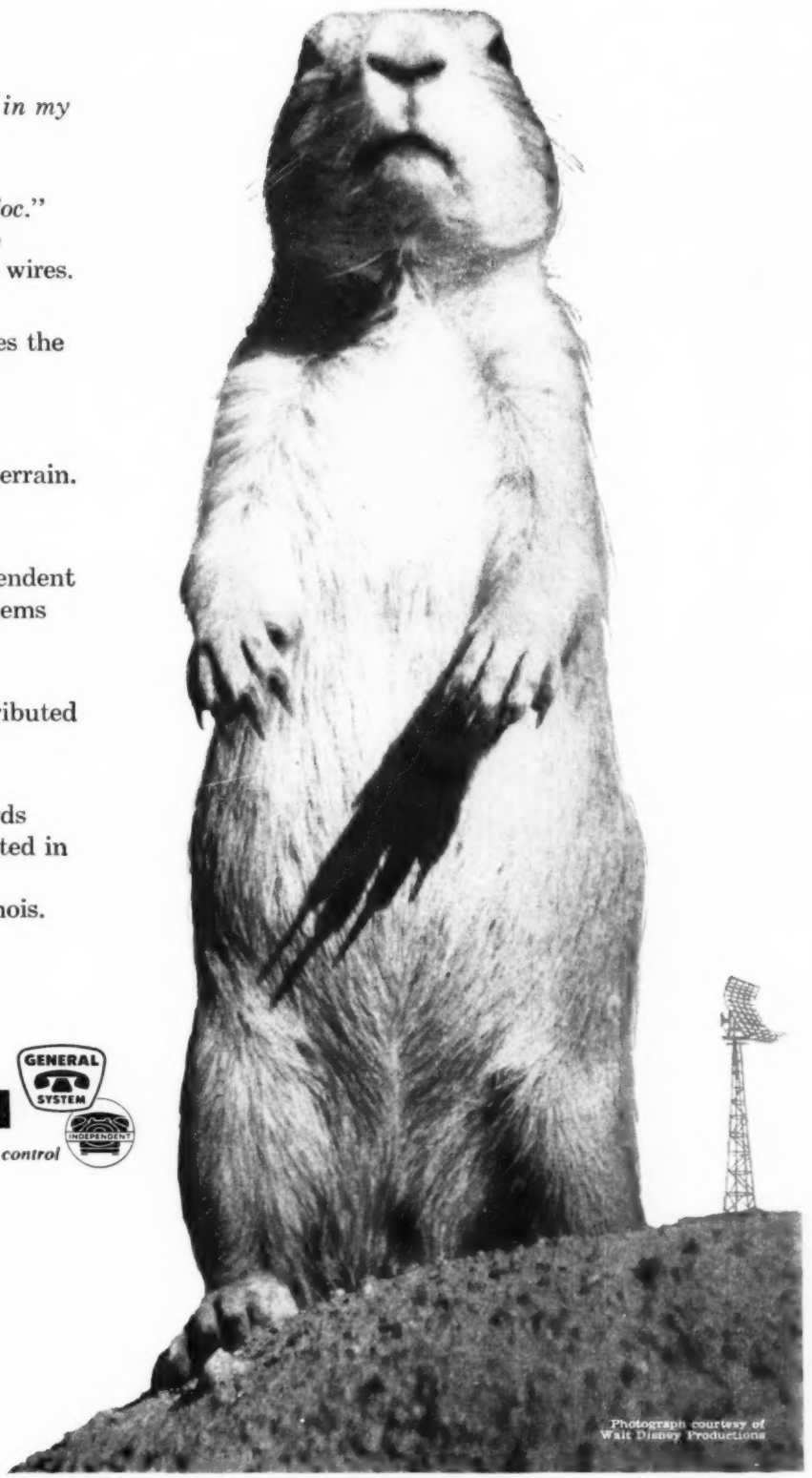
"*No wires?*"
Matter of fact, one microwave tower does the work of hundreds of telephone wires.

"*Sounds good.*"
Other advantages. No weather or maintenance problems. Tops for tough terrain. And adding new circuits is a cinch.

"*This thing catchin' on?*"
And how! Coast-to-coast success. Independent telephone companies solve a lot of problems with Lenkurt Microwave.

"*Lenkurt?*"
Check! And Lenkurt Microwave is distributed by Automatic Electric.

"*Automatic Electric?*"
Yep. That outfit will lean over backwards to help *any* telephone company get started in microwave or carrier. They're at 1033 West Van Buren Street, Chicago 7, Illinois. Or phone 'em at HAymarket 1-4300.



AUTOMATIC ELECTRIC

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Originators of the dial telephone · Pioneers in automatic control

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What You Want
When You Want It

Prompt delivery of your order as specified is assured by Lindsay's fast, efficient, *personalized* service . . . plus a complete line of nationally known telephone supplies. Remember—Lindsay *specializes* in telephone supplies *only*—your guarantee that you can "Look to Lindsay" for satisfaction on every order. Phone or write for immediate delivery or required data.

THE LINDSAY TELEPHONE SUPPLY CO.
10409 Meech Ave., Cleveland 5, Ohio
Tel. Diamond 1-9212

General of Ky. Names Boyd Head of Public Relations

H. J. Huether Jr., president, has announced the appointment of Arthur F. Boyd as director of public relations for the General Telephone Co. of Kentucky, Lexington, the appointment to be effective Sept. 1.

Mr. Boyd, who has held the position of general commercial engineer for the

A. F. BOYD

company since 1950, started his telephone career as a transmission engineer in 1927. He joined the present General Telephone System in 1944, serving as general commercial survey engineer for the east central group of the system, which at that time comprised the states of Kentucky, Indiana and Michigan. In 1946 he was assigned as district commercial manager for the Lexington district of the Kentucky company and served in that capacity until 1950.

The addition of Mr. Boyd to the executive staff is another step forward in the program to provide the General Telephone Co. of Kentucky with adequate personnel to man the expanding territory being served by the company.

Recalls Telephone's First Use in Convention Coverage

Reporters used the telephone to cover a political convention for the first time in history when the Republicans nominated James A. Garfield at Chicago in June 1880, the *Chicago American* recalled recently.

Garfield, heading the Ohio delegation, nominated John Sherman for President, opposing the nomination of President Grant for a third term. However, Garfield himself was nominated on the 36th ballot as a compromise candidate.

LINEDEX SPEEDS HANDLING OF REPAIR CALLS

Remington Rand Linedex Rotary equipment pictured at Peninsular Telephone Company of Tampa, Florida, which houses information on 90,000 telephone subscribers, makes a wealth of data visibly available for fast reference. Linedex inserts contain . . . telephone number . . . name of owner . . . and street address. Different colored inserts denote . . . a party line . . . private line . . . or a temporarily disconnected line. Colored signals, easily attached to insert, indicate a line out of order, grounded, or suspended for nonpayment . . . other information can also be signal controlled.

Efficient handling of trouble calls, especially in bad weather, immeasurably contributes to the high level of customer relations and goodwill. Precious time lost in obtaining desired information from vertically filed cards is now *SAVED* . . . Remington Rand Linedex carries complete data in listed form . . . in one place . . . read at-a-glance . . . enabling swift action to be taken. Operators refer to Linedex while comfortably seated . . . "flick of a finger" to indexed tab guide delivers the pertinent facts. Individual inserts are securely anchored to frames (mounted in rotaries), but can quickly be moved when changes occur. Get the full facts on time-saving Linedex . . . send for folder KD734 offered in coupon.

MICROFILM REDUCES TOLL BILLING COSTS for Citizens Telephone Co. of Decatur, Indiana

Toll Statement Handling Reduced

Now Citizens Telephone Company quickly makes a microfilm record of the original toll tickets, and mails the originals to the customer along with the bill. Eliminated is the need for posting individual toll calls on the statement with "date called," "town called," etc. A single total charge for all toll calls is posted; the original toll tickets let the subscriber verify separate calls and charges. A 60% saving in labor has been accomplished with the new microfilm system.

Ticket storage and filing operations are also eliminated with sizable savings in labor! Microfilm records for nearly 2½ years of operation are now stored in less space than was formerly needed for filing toll tickets for a 6-month period.

Administrative savings the first year of operation paid for the microfilm equipment! What's more, the new method of handling toll tickets has brought improved service to subscribers. Microfilming the Remington Rand way brings fast, accurate billing at reduced cost! For details, Circle CH842.

Speedac Chaindex Reference Unit for PBX Operations

Expertly designed Keyshelf Directory Unit for telephone numbers and extensions, developed for use at PBX switchboards. You benefit by: 1. Fast Reference . . . A flip of the pocket makes any line in a reference of up to 1040 lines instantly available. Cards of different colors are used to provide a wide signalling range. 2. Flexibility . . . Any line of information may be removed or replaced, and any new line of information may be added in proper sequence, *without disturbing the order of other lines.* 3. Simple, Rapid Installation and Maintenance . . . Chaindex cards easily feed into typewriters or addressing machines. 4. Compactness . . . A single Speedac Chaindex Reference Unit takes up only 5½" x 10¼" on the keyshelf, yet provides instantaneous reference to as many as 1040 lines of data. Circle KD767 in coupon for complete details.

Visit our exhibits at the Chicago USITA Convention . . . October 15, 16, 17.

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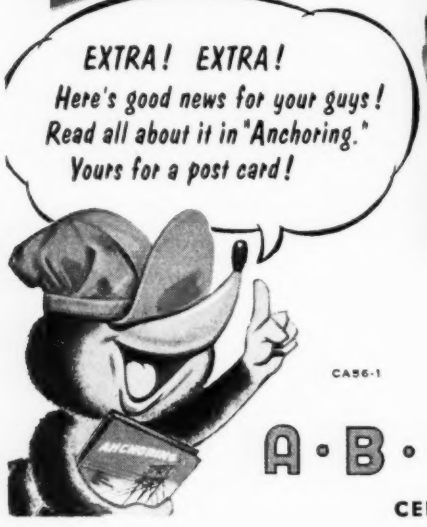
CHANCE 8-WAY ANCHORS

It's not surprising that in every field test the Chance 8-Way Expanding Anchor holds more than its rated load because its design just makes common sense. *Eight* blades expand to form a pyramid shaped square —there is no wasted space between blades. The load is distributed *evenly*—all around the hole. It just seems logical that it should hold more, and it does. That's why it's on so many company standards. Your Chance Anchor Distributor can supply you from stock. *Specify Chance for Service!*



"ANCHORING" is the most complete guide to anchoring and guying ever developed. Shows how to choose the right anchor for every job—and how to install it *right*.

CA56-1

A·B·CHANCE CO·

CENTRALIA, MISSOURI

Scharffenberger Elected President of Kellogg

George T. Scharffenberger has been elected president of the Kellogg Switchboard & Supply Co., Chicago, Ill., a division of the International Telephone & Telegraph Corp., it was announced on Sept. 14 by Edmond H. Leavey, ITT president.

Mr. Scharffenberger joined the ITT system in 1943 as general auditor of

G. T. SCHARFFENBERGER

its Federal Telephone & Radio Co. division, and a year later was made its assistant comptroller. Following service with the U. S. Army, he rejoined Federal becoming its comptroller in 1947. From 1950 to 1952, he was assistant to the president of ITT, and in 1953, again returned to Federal as vice president and a member of its Management Advisory Board.

In 1955, Mr. Scharffenberger transferred to the Kellogg Switchboard & Supply Co. division in Chicago. Prior to his recent election as president of the Kellogg division, he held the title of vice president and general manager.

Before joining the ITT System, Mr. Scharffenberger was with the accounting firm of Arthur Andersen & Co. in New York City. He is a native of New York, a graduate of Columbia University and a certified public accountant of the state of New York.

Reason for Contemplation

"A contemplative life has more the appearance of a life of piety than any other; but it is the divine plan to bring faith into activity and exercise."—CECIL.

For Mental Development

"In order to improve the mind, we ought less to learn than to contemplate."—DESCARTES.

REYNOLDS ALUMINUM OUTDOOR TELEPHONE BOOTH

It goes where business is!

Pick up New, Extra Revenue. Football, like many other sports and recreational attractions, is big business. Here's only one example of the many profitable locations for lightweight, portable, easy-to-set-up and easy-to-relocate Reynolds Aluminum Outdoor Telephone Booths! Use them outside shopping centers, service stations, airports, drive-in restaurants and theaters, along the highway, at downtown corners and busy vacation spots.

Extend Service Anywhere. Reynolds Aluminum booths weigh only 325 lbs. erected . . . can be quickly assembled by unskilled labor. They're rigid and sturdy, yet simple to move where business *is*. And styled to *attract* extra-revenue paystation business! They're colorful, roomy, convenient—provide out-in-the-open accessibility day or night—"open" 24 hours a day, *every* day!

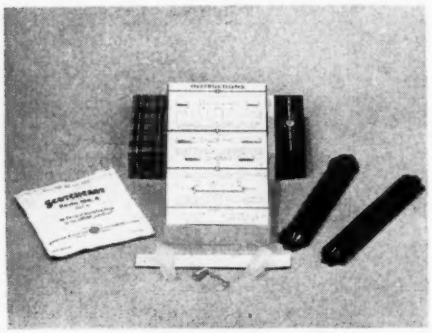
Offer "Something Extra" for Extra Profits. Bright, cheerful Reynolds outdoor booths are a credit to any location. Their friendly, inviting atmosphere, interior roominess and perfect ventilation stimulate *additional* paystation usage. Go after this "bonus revenue"—without reducing the number of calls from existing indoor locations. Write for complete specifications and revenue-producing data today. *Address: Reynolds Aluminum Fabricating Service, 2000 South Ninth Street, Louisville 1, Kentucky.*

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

News on New Products

CABLE SPLICING KITS—A series of three new splicing kits for casting in-line cable splices in epoxy resin have been added to its line of in-the-field splicing kits, Minnesota Mining & Manufacturing Co. has announced.

Using the new kits, which feature a convenient new split-mold, water-tight splices can be insulated in the field in less than 10 minutes. Once a splice has



been cast, it is permanently encased in a block of insulating resin which will remain solid despite aging, heat and pressure, the company said.

Design of the kits makes it possible to use them underground or when splices are exposed to severe weather and moisture conditions. Designated "Scotchcast" splicing kits 82-A1, 82-A2 and 82-A3, the new kits will accommodate wires and cables with outside diameters ranging from ¼-inch to 1-7/16-inch.

The 82-A1 kit will take wires from ¼-inch to ⅝-inch; the 82-A2 kit will fit from ⅝-inch to 1-inch; and the 82-A3 kit from 1-inch to 1-7/16-inch outside diameters.

Each kit contains all materials necessary for encapsulating a cable splice including "Scotchcast" resin No. 4 in the proper size "Unipak" container, two pouring spouts, and two plastic mold halves which snap together around the cable. The 82-A1 kit includes a "Scotchlok" connector.

Heart of the kit is the "Unipak" container—a plastic envelope—which holds an epoxy resin and an activator in liquid form, measured to the correct proportions, on opposite sides of a dividing membrane. When the membrane is ruptured and the plastic envelope kneaded, the resin and activator are mixed without being touched by the splicer. After pouring, the mixed resin cures in a matter of minutes through heat generated by chemical action between the two liquids.

In assembly, the splice is prepared in the conventional manner and the two mold halves are snapped into place around the splice to form a self-venting mold. The pouring spouts are inserted at each end of the mold and the resin is mixed and poured into the spouts.

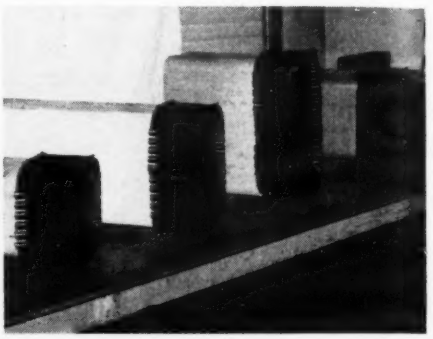
Because of the heat generated by the chemical action within the resin, its viscosity is low enough to insure thorough penetration to all parts of the splice, according to 3M.

The kits are individually boxed to protect the molds and the "Unipak" container and are packaged in cartons of ten boxes. Request NP566.

•

CONDUIT CONNECTORS—Plymouth Industrial Products, Inc., announces the development of a new type underground duct connector for 4, 6, 8 and 9-way multiple duct underground conduit.

These connectors are designated MTD, which is a registered trade mark, and fabricated of thermoplastic material in which is incorporated fiberglass and inert fibers.



The connector sleeves are used to join the ends of multiple duct clay tile for job economy and are now presently in production for the 4 and 6-way duct sizes. These connectors will soon be available for the 8 and 9-way. Request NP567.

•

PORTABLE WEIGHT INDICATOR—W. C. Dillon & Co. has introduced a portable suspension scale. The Dillon Weight Indicator, because of its light weight, can be easily moved about in storage yards by one man for the weighing of numerous materials such as wire coils, kegs, scrap, etc.

Another highly useful operation is the pre-weighing of poles before trucking. By so doing, it is possible to avoid costly highway fines due to overloading.

In the field, the weight indicator is especially useful as a means of checking partly empty cable reels without having to cart them back to the yards to a conventional platform scale.

Available in five capacities, from 0-250 to 0-5,000 lbs., the Dillon Weight Indicator has a warranted accuracy of within one division and is equipped with a large 16-inch diameter dial for easy reading from a distance.

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP566_____; NP567_____; NP568_____; NP569_____;
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Name..... Title.....

Company.....

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9/22/56

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Accidental overloads of up to 25 per cent can be sustained without injury to calibration and actual safety factor is several times the rated capacity.

Net weight of all ranges is only 42 pounds, and dimensions are but 16x 29½ inches, thus making it an ideal instrument where headroom is limited. All models come complete with eyebolt and 360° swivel hook. Request NP568.

•

OUTDOOR BOOTH—A new outdoor telephone booth has been developed by the Prairie Implement Co. The Prairie Model "C" Outdoor Booth is 13 inches x 18 inches x 31 inches.

It is well illuminated, attractive and ruggedly built and can be easily installed at a low total cost to enable the telephone company to open new sources of revenue, the company states.

At present Model "C" booths are being used in small towns, new real estate developments, filling stations, parking lots, and for curb-side drive-in use with the party making his call from the car seat.

The sides and self closing doors are made of clear plexiglas. The roof and signs are of red plexiglas. The back and frame are of aluminum. Night illumination comes from the red roof and signs. All service is through a concealed tube at the rear of the booth.

The booth is easily mounted on a wall, pole or special column. Paystation is securely mounted on the service tube. All mounting bolts are concealed. Self-closing door opens to the left. Request NP569.

•

GRAPHITE GUN—A new graphite

How to Earn
EXTRA DOLLARS
in Operating Savings

YORK-HOOVER
model 56LGU78
repair and
cable maintenance body

The Model 56LGU78 Body is an exceptionally practical unit for installation and repair jobs and cable work as well.

This one man cable maintenance body or general repair unit is practical because ample drawer and shelf space is provided for carrying necessary materials and tools, while the entire body loading space is available to transport other necessary equipment.

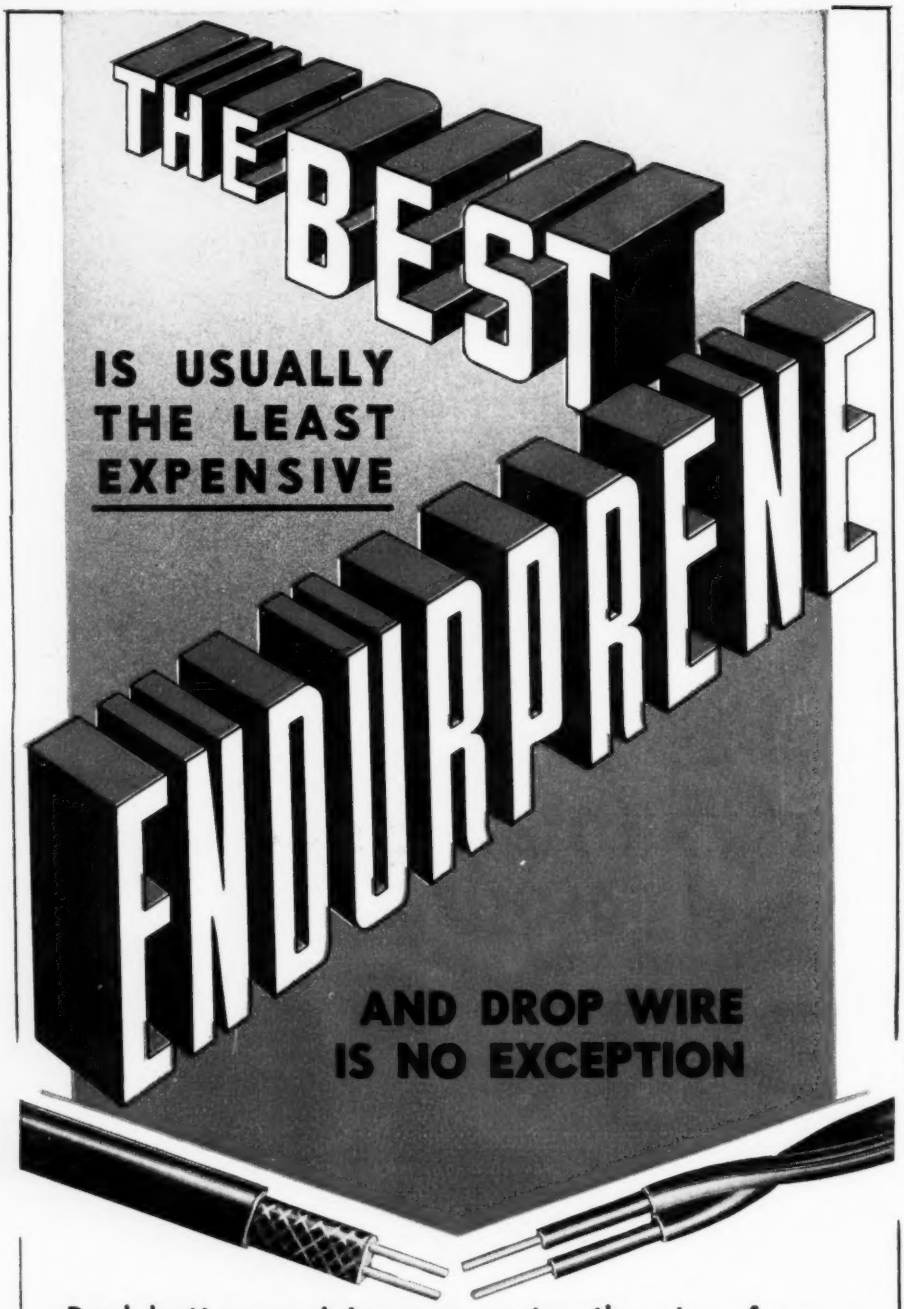
Lightweight, yet rugged construction and functional capacity are two reasons why you should investigate the Model 56LGU78 Body Unit . . . built and backed by York-Hoover . . . a famous name in the Transportation Industry since 1892.

For the complete Model 56LGU78 story, write for Bulletin No. 938 today!

Interior of body showing installation of one man splicers unit adaptation which is available under Optional Equipment. Ladder brackets which are illustrated are Type OH78-220 for two extension ladders.

The above shows body with easily operated sliding roof, locked in closed position. Drop gate is particularly rugged for hard usage. Note optional rear bumper and LB towing hook installation.

BODY DIVISION
YORK-HOOVER CORPORATION
YORK, PENNSYLVANIA



Rock-bottom maintenance costs—the aim of every on-the-ball plant executive—come when you buy the drop wire that stays up, year after year, storm after storm.

NEOPRENE!

Ask your own Kellogg man for the whole story. He will be glad to furnish you an interesting box of samples.

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KELLOGG SWITCHBOARD & SUPPLY CO.
CHICAGO, ILLINOIS

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE 5, RHODE ISLAND

container and gun that dispenses graphite with a squeeze of the fingers, has just been placed on the market by Servwell Products Co.

Enough graphite is contained in the unit to permit several thousand "shots" of lubrication to various parts and pieces needing lubrication. A rubber "squeeze-type" bulb is attached to the graphite container to provide a fine graphite spray that is easily directed to the target without squirting or clogging.

Lubrication by graphite meets today's lubricating needs where close tolerances are encountered on most all pieces of mechanical equipment and assemblies that are no longer adequately lubricated by conventional means, the company states.

Because gun-sprayed graphite does not run, drip, freeze, melt or dry out, it is ideal for lubricating items made of metal, rubber, wood, leather, paper or other materials that squeak, stick or rub, according to the company.

A light finger-tip squeeze on the rubber bulb, with nozzle held close to the object, delivers a light or heavy spray with pin-point accuracy. Large areas up to 100 square inches are easily covered by full finger-tip pressure on the rubber bulb.

The area to be covered and the output of spray is determined by the distance the nozzle is held from the object and the pressure exerted. Request NP570.

•

VENTILATING HEATER—Morrison-Pelsue Co. has placed on the market its new MoPeCo ventilating heater, designed especially for the cable splicer working in manholes to give him a constant supply of fresh air year around. It is a ventilator in summer operations, and in the winter heated fresh air is forced into the manhole. Heated fresh air is desired to dry out the manhole and warm old paraffin splices. The ventilating heater permits the splicer to perform his work with more speed and safety. Propane is the fuel used to

A TELEPHONE EXCHANGE ON WHEELS!

The new Illinois Bell Mobile Dial Exchange on its way to Schaumburg Township near Chicago, Illinois.

Interior view of the Michigan Bell Mobile C.D.O., installed at Garden City, Mich.

and Bell System Companies Use Highway Trailers!

HIGHWAY Trailers now roll for the Bell Telephone System as Bell System companies install and operate their new "telephone exchanges on wheels" to service rapidly expanding communities.

Bell officials chose Highway Trailer Company to design and build the new units — air-conditioned, all-steel, drop-frame trailer vans which house specially engineered, complete dial exchanges with capacities ranging up to 1200 telephone customers! The first units are now in service for Illinois Bell and Michigan Bell Telephone Companies, and soon will be for New Jersey Bell Telephone Company.

This remarkable new development typifies the Bell System's reputation for advance planning and greater public service—and because they use Highway Trailers, Bell System companies will get long, trouble-free service life and dependable performance on the job, no matter what the task.

Highway's impressive performance record backs up that confidence!

HIGHWAY TRAILERS

A Division of the Equipment Department, Marmon-Chapman & Scott Corp.

With Highway Trailers . . . the most important feature is PERFORMANCE!

HIGHWAY TRAILER COMPANY

HEADQUARTERS: EDGERTON, WISCONSIN

Manufacturers of: Commercial Trailers • Trailerized Tanks and Dry Bulk Haulers • Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-offs • Service Accessories

SALES AND SERVICE IN PRINCIPAL CITIES

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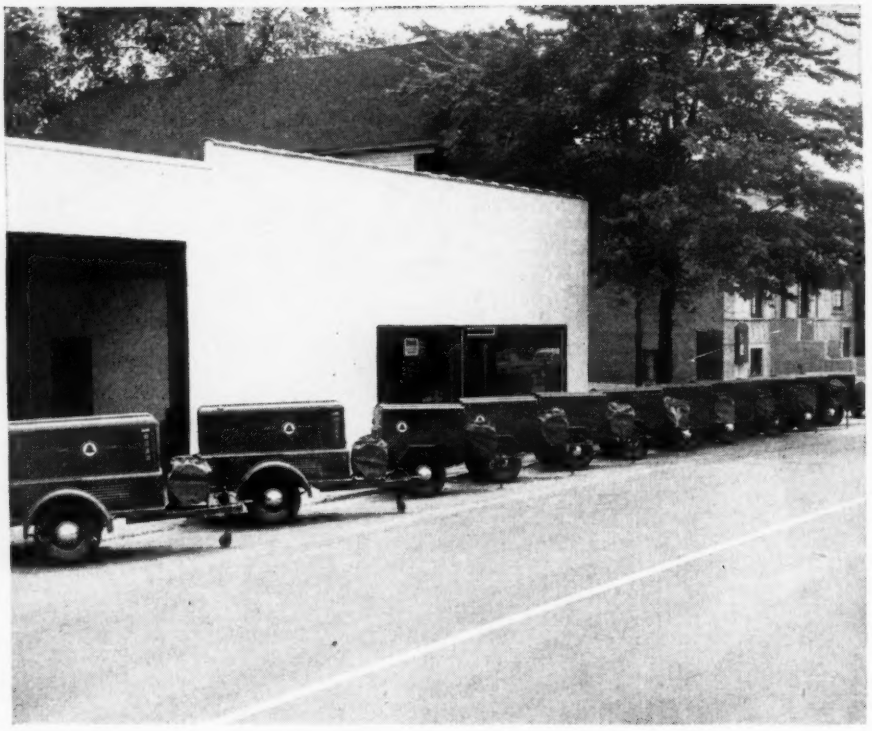


Power insurance . . . on wheels, for the Michigan Bell System

This fleet of eleven trailer-mounted Onan Electric Plants was recently put into service by the Michigan Bell Telephone Company. Self-contained and highly mobile, these gasoline-powered generating units can be rushed to any exchange where an outage of commercial power occurs.

The new fleet consists of six 5KW, three 10KW and two 25KW Onan plants. All are remote starting units generating 115/230-volt, 60-cycle, single-phase current. Each is mounted on a high-speed, 2-wheel trailer with a weatherproof housing that encloses the built-in fuel tank, starting battery, engine-instrument and electric meter panels, and A.C. outlet receptacles. The drawbar supports an extension cord reel.

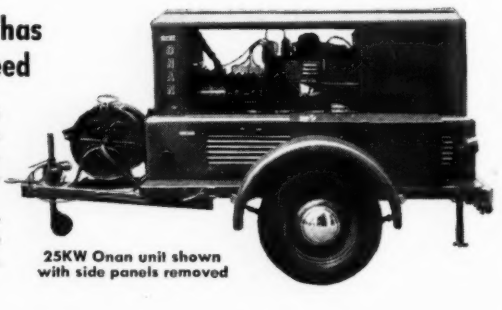
Within minutes after the electric plant arrives at the exchange, it is supplying power to keep telephone service operating.

The Michigan Bell System is one of many companies using Onan Emergency Electric Plants to help assure vital telephone communications at all times, under all conditions.

Trailer-mounted, or permanently installed, Onan has a standby plant for every need

Standby models are available from 1,000 to 75,000 watts. Air-cooled models up to 10,000 watts available with Vacu-Flo air-cooling for installation in areas where ventilation is a problem.

Onan also builds lightweight, portable plants for plug-in electricity on maintenance and construction jobs. 500 to 10,000 watts.



25KW Onan unit shown with side panels removed

See how other companies are using Onan Standby and Portable plants. **WRITE FOR FOLDER.**

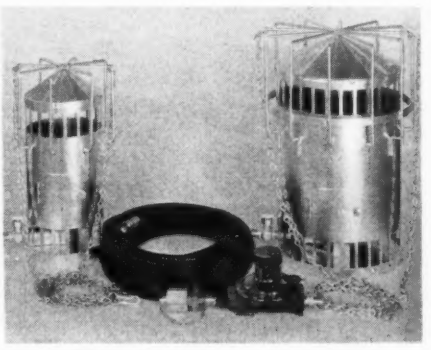
D. W. ONAN & SONS INC.

3882 University Ave. S.E., Minneapolis 14, Minnesota

operate the complete unit. Request NP571.

•

TENT HEATER — Morrison-Pelsue Co. also has introduced its MoPeCo propane tent heaters for cable splicers working on aerial cable—especially for one-man cable splicing. It is available



in two sizes—4,000 BTU and 8,000 BTU. The heater is supplied with a valve to adjust the flame and to shut it off. It is equipped with a low pressure regulator and 30 feet of L.P. gas hose. Two 4 foot chains with snap hooks are used to suspend the heater from the strand. Request NP572.

•

SAFETY WHEEL BLOCK—Announcement is made by Calumet Steel Castings Corp. of a special heavy duty wheel block, which may be equipped with a sign post to show whether the block is in place during lift truck operations at the loading dock. This new type block is a one-piece casting of alloy steel with angular pointed calks to eliminate slippage, and is designed with rounded sections to prevent damage to equipment. It is known as Heavy Duty Wheel Block #WB-15.

The sign feature is not an integral part of the wheel block, but when and if it is used it is a contributing factor to improve safety conditions for trucks being loaded at freight platforms or from cars.

It is recommended that a vertical

standard be attached to the block with a short connecting arm and base plate, so that a double-faced sign may be fastened at the top to be visible both to the driver of the truck and the operator of the lift truck.

When the safety block is in proper holding position next to the tire, the flag will indicate to the lift truck operator that the truck is anchored. If the block is moved out of place, however, this flag will be displaced, thus warning the driver and the operator that conditions are unsafe.

The producer of the blocks does not furnish the standards, but will carry on hand a stock of enameled metal signs which can be supplied with the wheel blocks at a reasonable cost. It is suggested that the standards be constructed by the purchaser so that they can be made of suitable size and height to accommodate the trucks requiring such safety equipment. Regular ¾ inch pipe or conduit is light and strong enough to serve this purpose. Request NP573.

•

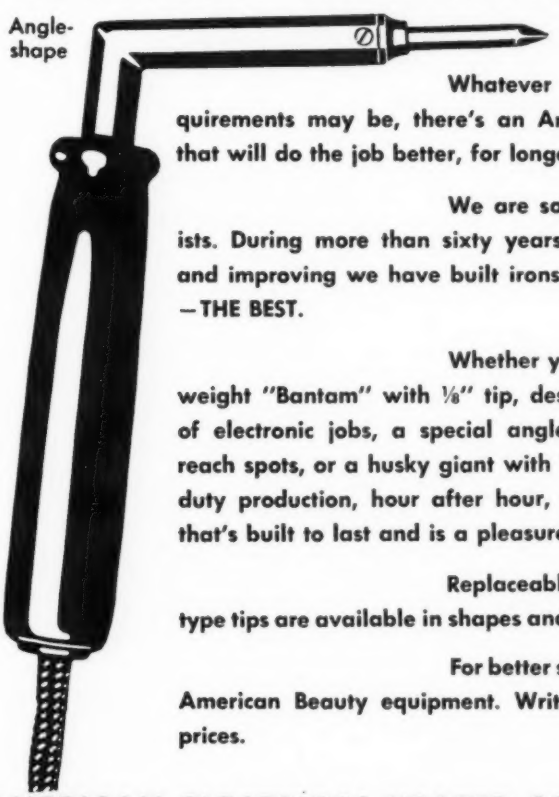
POLE SOUNDER — A new pole sounder—the M-pact-O—has been introduced by Engineers Tool Co.

With the pole sounder, the company states that it takes only a minute for a lineman to test the safety of every pole he must climb. This impaction tool penetrates the pole 6 inches below the surface of the ground. The operator can tell instantly if pole is rotted by the vibration felt in the impaction handle. In addition to this very important, man-saving feature, both time and money can be saved by pre-testing poles for ground rot. Maintenance costs are saved by installing new poles before old, rotted poles fall, carrying expensive installation lines with them, the company points out.

The over-all length of the pole sounder is 58 inches; impaction handle

1/8 to 1 1/8
TIP DIAMETERS—
30 to 550 WATTS

American Beauty
ELECTRIC SOLDERING IRONS



Whatever your soldering requirements may be, there's an American Beauty iron that will do the job better, for longer.

We are soldering iron specialists. During more than sixty years of constant testing and improving we have built irons of only one quality —THE BEST.

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Replaceable, hi-efficiency, plug-type tips are available in shapes and sizes you will want.

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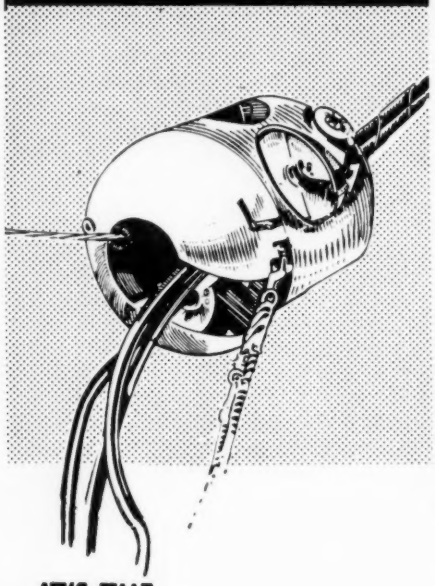
THREE TO ONE



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ONE COMPACT UNIT

ALSO SPINS SINGLE CABLE PERFECTLY

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Automatic Electric of Canada
Pirelli of Great Britain

is 24 inches long and 1¼ inches in diameter, and its weight is 7½ pounds. Request NP 574.

Recipe for Contentment

"Learn to be pleased with everything, with wealth so far as it makes us beneficial to others; with poverty, for not having much to care for; and with obscurity, for being unenvied.—PLUTARCH.

Calm Demeanor Analyzed

"The constancy of the wise is only the art of keeping disquietude to one's self."—ROCHEFOUCAULD.

Federal Grant to States?

"There is no such thing as a federal grant to the states. The money comes from them. Washington takes a deduction for federal administration. The federal government tells the states how to spend it."—HARRY F. BYRD, *U. S. Senator from Virginia.*

For the Market Place

". . . despite the complaints about costlier credit, we think the market place makes a better manager of economic development than the erstwhile theory of endless boom created out of endless inflation."—EDITORIAL STATEMENT, *The Wall Street Journal.*

Stromberg Advances Five In Telecommunications

Five personnel advancements in the telecommunication division (formerly the telephone division) of Stromberg-Carlson, a division of General Dynamics Corp., have been announced by John H. Voss, vice president and general manager, effective Sept. 4.

William A. Rockwood, formerly assistant to the vice president, was named assistant general manager, telecommunication division.

Harry M. Bruckart, formerly chief engineer, became assistant to the vice president, with present responsibility for the guidance of policy concerning dial switching systems.

Robert E. Dobbin, formerly assistant chief engineer, was appointed chief engineer.

W. Wallace Weedfall, formerly staff assistant, became assistant to the vice president, with present responsibility for the guidance of policy concerning carrier, multiplex, and microwave systems.

Malcolm P. Herrick, formerly Staff Assistant, was named assistant to the vice president, with present responsibility for guidance of policy concerning industrial products.

John H. Voss (second from right), vice president and general manager of telecommunication division of Stromberg-Carlson, discusses production problem with five men whose advancement in the division has just been announced. They are, from left: Robert E. Dobbin, new chief engineer of the telecommunication division; Harry M. Bruckart, assistant to the vice president; William A. Rockwood, assistant general manager; W. Wallace Weedfall (standing), and Malcolm P. Herrick, both assistants to the vice president.

Helpful Literature

MINIATURE ELECTRONIC TUBES—A catalog is now available for the first time on the L. M. Ericsson line of "Ruggedized-Longlife" miniature electronic tubes. Every tube in this line is guaranteed for a minimum of 10,000 hours operating life.

L. M. Ericsson is a Swedish organization manufacturing electron tubes under Western Electric and other licenses. The catalog gives complete ratings and specifications of tubes in the "Longlife" series, such as the 404A, 407A, 408A, 417A, 2C51 and more. Request HL311.

•

HEAVY DUTY TRUCKS—International Harvester Co. now is offering a new 20-page catalog which contains complete information on International four-wheel conventional and cab-over-engine heavy-duty trucks with six-cylinder engines. Gasoline, liquefied petroleum gas, and diesel-powered models are covered in the attractive piece.

Full-color and two-color illustrative treatment is employed throughout the book. It presents design and operating features of the four-wheel R-line and CO models, manufactured at the company's Fort Wayne (Ind.) Works, as straight trucks and truck tractors including the R-185, R-190, R-200, R-210, R-220, CO-180, CO-190, CO-200, and CO-220 series. Request HL312.

•

CONDUIT DUCTS—"New Johns-Manville Plastic Couplings," is the title of an illustrated, four-page folder which presents the time saving and money saving advantages of these couplings for Transite Ducts used in telephone conduit lines. The on-the-job photographs show installations in various sections of the country. Also shown are some of the various methods of installing and positioning Transite Conduit and Korduct which J-M plastic couplings make possible. Request HL313.

•

XEROGRAPHY—A four-page, two-color brochure describing Acme Visible photo panels and xerography is available from The Haloid Co. The brochure illustrates and explains the use of xerography in the preparation and alteration of lists for Acme Visible photo panels, and shows how time and money savings may be effected on price and parts lists, catalogs, directories, indexes, etc.

To any company faced with the problem of maintaining lists, investigation of the Acme Visible-xerography combination should prove worthwhile. The brochure should be of especial interest to those already using Acme Visible photo panels. Request HL314.

•

TRUCK AND TRAILER RESTRICTIONS—A booklet giving the 1956-57 truck and trailer size and weight restrictions for each state has been prepared by The Four Wheel Drive Auto Co. Request HL315.

•

ATOMIC RADIATION—The National Academy of Sciences of the National Research Council has issued a book which should be of interest to all telephone companies and industrial organizations. The book is entitled "The Biological Effects of Atomic Radiation—A Report to the Public."

Business concerns have been urged to

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation further information on the products described in the following numbers:

HL311 ____ : HL312 ____ : HL313 ____ : HL314 ____ : HL315 ____ :
HL316

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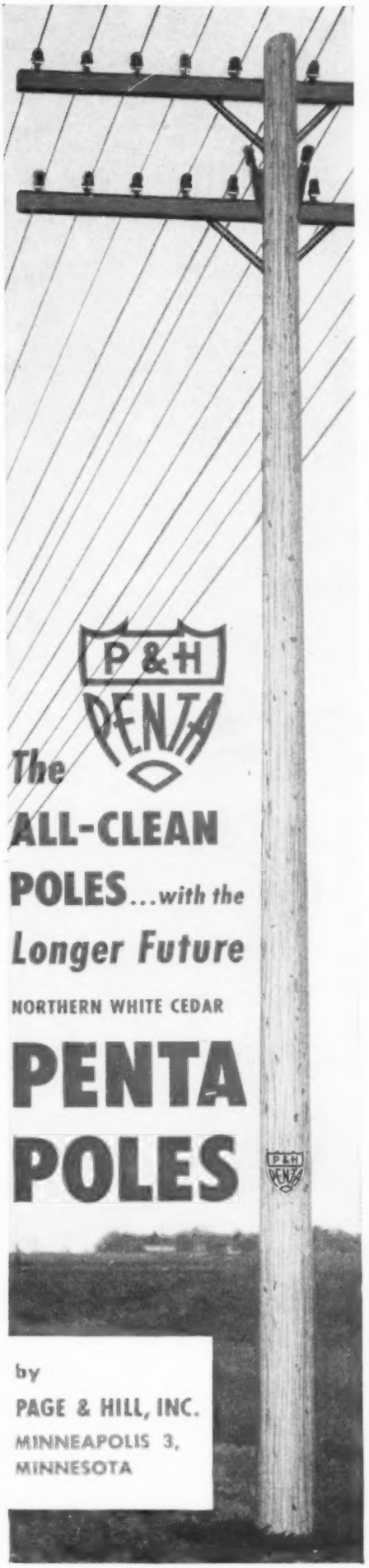

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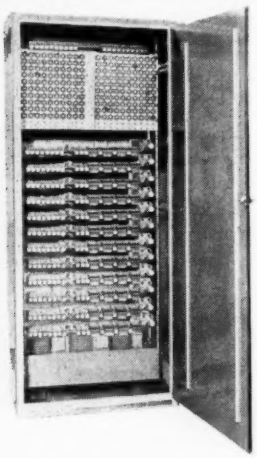
NEW
COMPUTER INTERCEPT



New equipment for placing any TPL or TPS number or combination on intercept by the patch-cord arrangement within Computer field. Easy to install. Standard relays.

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Universal Also manufactures Digit Absorbers and Code-to-Selective Ringing Converters.

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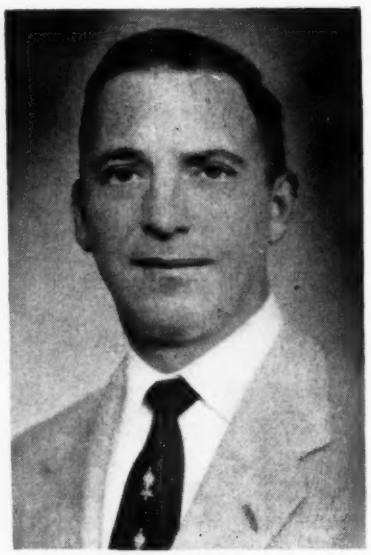
learn all they can about the effects of atomic radiation. This book tells the citizen what science has learned thus far about the potential effects of atomic radiation on himself and his progeny, and on the race as a whole. Request HL316.

Whitney Blake Announces Two Sales Staff Changes

Two changes that affect the sales staff of Whitney Blake Co., New Haven, Conn. wire manufacturer, have been announced by John Brown Cook, president.

Wesley C. Bunnell has been promoted from assistant sales manager to sales manager and Harold L. Gobeille has been given the responsibilities of advertising and sales promotion manager in addition to his duties as field supervisor.



W. C. BUNNELL

H. L. GOBEILLE

Mr. Bunnell began his employment with Whitney Blake as a production worker early in 1937. In the following years he served in the capacities of finished product inspector, laboratory technician and production foreman. He joined the sales staff in 1943. In 1945 he entered the U. S. Army and returned to his position in the sales department the following year. He was advanced to the position of assistant sales manager in 1952.

Mr. Gobeille served three years with the U. S. Army until 1946 after which he was employed by Williams & Co. as a salesman in the Cleveland area. In 1951 he joined the Cleveland Hy-Pressure Casting Co. in the capacity of sales manager. The following year he was appointed to the Whitney Blake sales staff in charge of the Cleveland office. He was transferred to the home office to take over the duties of field supervisor in 1955.

Both men work under the direction of J. Marshall Taylor, vice president in charge of sales.

Sequoia Process Opens Eastern Sales Division

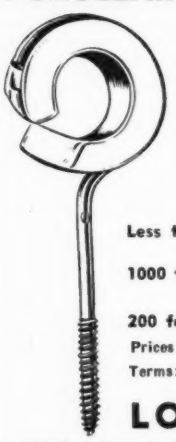
Sequoia Process Corp., manufacturer of plastic-insulated wire and cable at Redwood City, Cal., announces the opening of an eastern sales division at Newark, N. J. under the management of Emmette F. Gumm.

Office and warehousing space has been leased at 17 William St., Newark, with a combined area of 1300 square feet. Sequoia's eastern sales area will run north to Maine, south to Baltimore, and west to the western Pennsylvania and West Virginia line.

Urgent Need: Knowledge

"The very foundation of free society is the wisdom and knowledge of its individual citizens. The great and urgent need is for much to be known by many more."—PAUL C. SMITH, *president, Crowell-Collier Publishing Co.*

SAVE ON NEW SURPLUS
PORCELAIN INSULATED
SCREW EYES
by DIAMOND



White glazed porcelain, galvanized. 1" ID of eye with 9/32" slot and 2⅛" length of shank.

Less than 6¢ ea. qty. of 1000
1000 for **$57.50**
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Terms: shipped open acct. net 10 days.

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Of poles, crossarms, and preservative treatments. Analyses of wood preservatives. Consulting and specification writing. Inspectors stationed throughout U.S.A.
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YATES CONSTRUCTION CO.
"Specializing in Telephone Construction"
Cable Splicers, Telephone Installers, Equipment Installers, Construction crews.
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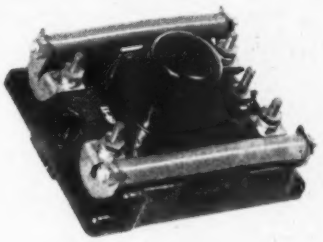

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WESTERN ELECTRIC #98A
Station protectors, complete with two No. 11C fuses, Two No. 2G and Two No. 27 protector blocks
Price.....$ .75 each
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Magneto Compact set convertible to desk or wall. Equipped with capsule type transmitter and receiver. Can be used on long rural lines.
Shipped complete with terminal block and refinished battery box.
PRICE $18.50 EACH
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FOR SALE

COMPLETE SET OF CABLE TOOLS—Platform, Tent, Fault Finder, etc. Write C. W. Gustavison, 928 E. 24th St. Court, Des Moines, Ia.

CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less.
Classified advertisements must reach us 8 days before publication date.

HELP WANTED

TELEPHONE TECHNICIAN — $8000 per year, renewable two-year contract for service abroad. Ability to supervise and train in installation and maintenance of Strowger PABX's. Ability to plan additions and knowledge of building wiring desirable. Single man about 30 years old preferred. Write Box No. 3877, c/o TELEPHONY.

MANAGER WANTED by REA financed telephone association in northwest Montana. Four exchanges in operation, with three to be cut over soon. Applicants qualifications should include a substantial background in the technical and administrative phases of telephone operation. Inquiries should include a general outline of experience, salary expected and date of availability. Company application forms furnished on request. Write Northern Telephone Association, Riley W. Childers, Box 72, Galata, Mont.

CENTRAL OFFICE REPAIRMAN to maintain 1200 line S.C. XY Dial C. O. Write Division Manager, The Southwestern States Telephone Co., Stuttgart, Ark.

WANTED LINEMAN AND MAINTENANCE MAN for 800 telephone exchange. State previous experience. Write Waunakee Telephone Co., Waunakee, Wis.

HELP WANTED

MAINTENANCE MAN for Magneto telephone exchange to be converted to dial located in the Wichita, Kansas area. Please give salary requirements, experience, marital status, education and picture in the first letter. Write Sedgwick Telephone Co., Inc., Box 1121, Dodge City, Kans.

PLANT ENGINEERS for large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, N. Y.

EXPERIENCED CABLE SPLICERS needed at once. Must be free to travel Middle and Eastern United States. Steady work—good pay. T. A. HEYWOOD, ENGINEERING, Box 197, Goshen, Ohio. Telephone Newtonsville, Ohio, REgent 4-4741.

CENTRAL OFFICE EQUIPMENT MAN for automatic toll center exchanges. Independent operating telephone company with 96,000 telephones and 58 automatic exchanges. Write Col. Wm. C. Henry, general manager, Northern Ohio Telephone Co., Bellevue, Ohio.

HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

WANTED: Telephone Installers, Cable Splicers, Linemen, Central Office Installers. Yates Construction Company, 1507 South 6th St., Paducah, Kentucky. Telephone 2-4623.

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TELEPHONES—all types—any condition. Write stating quantities and types. Our truck will pick up within 300 mile radius of Scranton, Penna. Write Box No. 3765, c/o TELEPHONY.

WANTED TO BUY
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Write: Box No. 3856, c/o TELEPHONY

FOR SALE

ONE REEL OF ANSONIA CABLE —NEW—1020 feet, 19 gauge, 303 pair, paired only, a reasonabe offer will buy. Write Jefferson Telephone Co., P. O. Box 267, Jefferson, Ia.

PAPER-LEAD TELEPHONE CABLES—3500 feet 26 pairs, 3000 feet 51 pairs, 2500 feet 101 pairs, 1500 feet 202 pairs. All 22 gauge. 2500 feet 26 pairs 24 gauge. Available in Charleston, S.C. for immediate shipment. Made to American specifications by largest West German cable manufacturer supplying many American Independents. Telephone or write: Columbia Technical Corporation, 61-02 31st Avenue, Woodside 77, N. Y. Telephone: AStoria 8-7401.

ONE WESTERN ELECTRIC COMMON BATTERY SWITCHBOARD with two Toll Positions, three Local Positions, one Rural Position, 1000 Line equipped, 20 Toll Trunks equipped, 30 Rural Lines equipped, three Manual Ringing Positions, three Automatic Ringing Positions, two Calculagraphs, three Local Interposition Trunking to Rural and Toll Selective Ringing Keys. Above equipment in good shape and is available for immediate inspection and delivery. Write The Craw-Kan Telephone Cooperative Association, Inc., Girard, Kans.

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IMMEDIATE SHIPMENTS

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No. 1212-AE	16-2/3 cycles
No. 1212-AF	33-1/3 cycles
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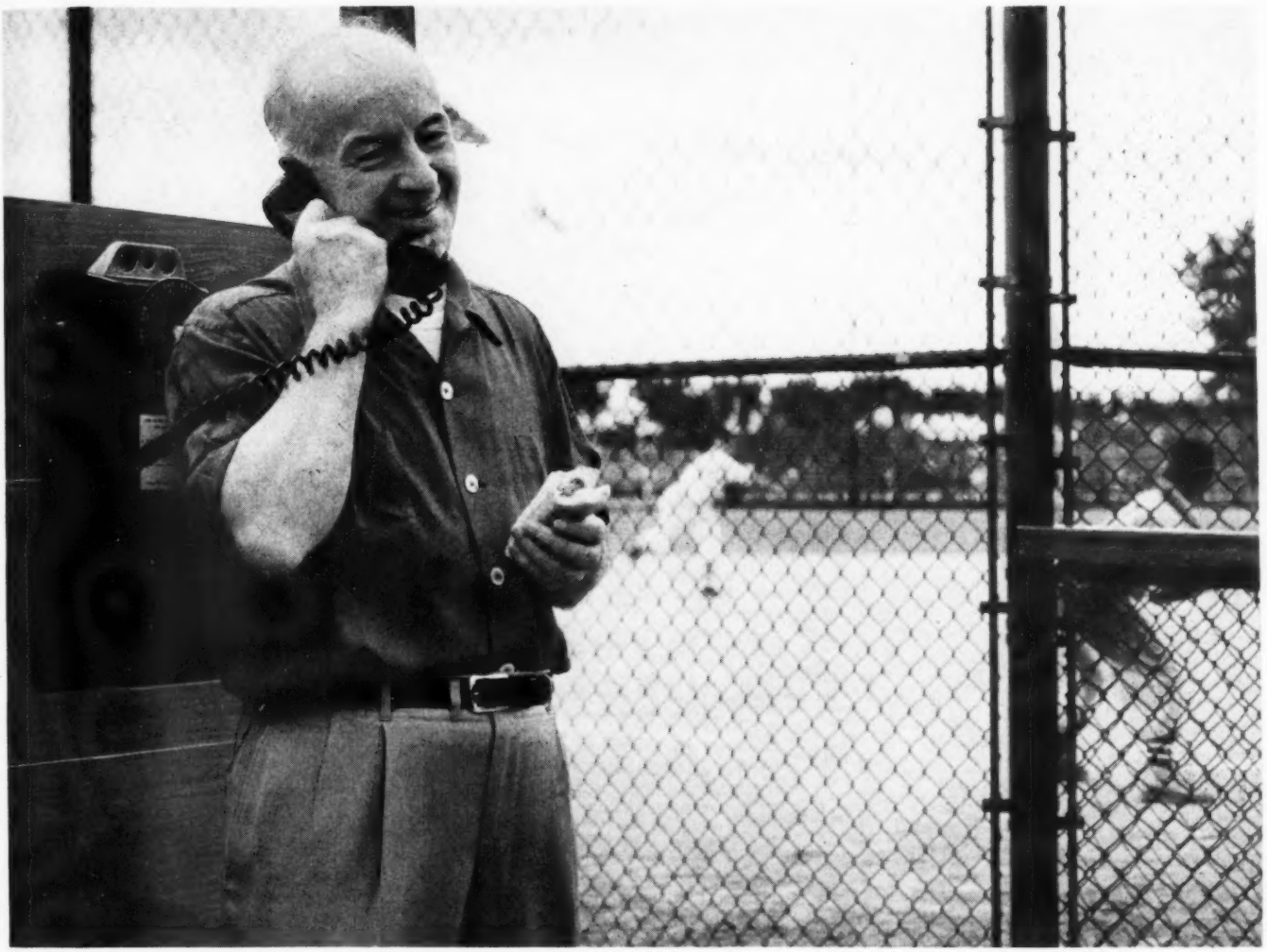

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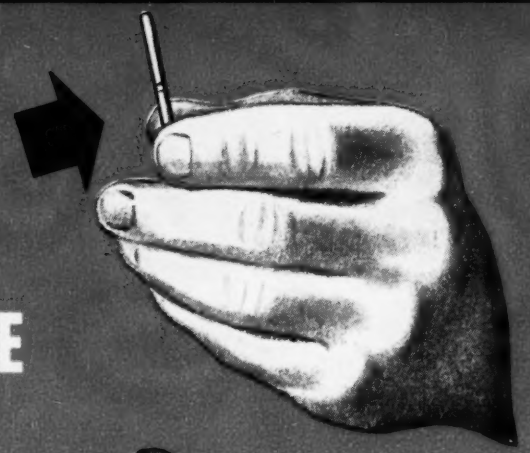

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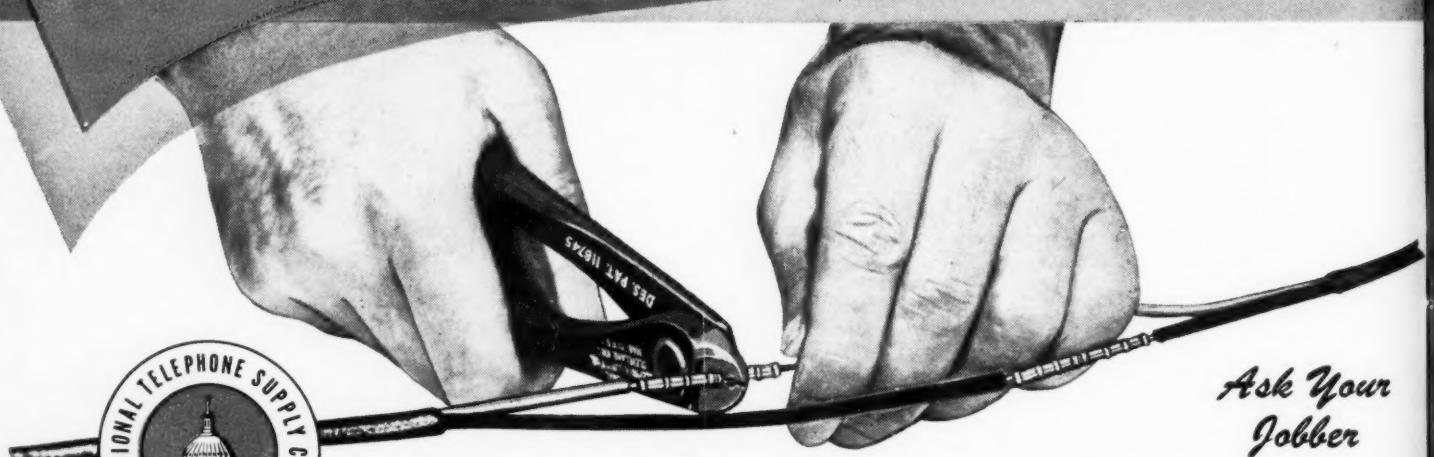

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